COLOR CRT MONITOR

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SERVICE *MANUAL*

KT-1903NA / KT-1703NA
KT-1403NA

KORTEK CORPORATION

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1.PRECAUTIONS

1-1 SAFETY PRECAUTIONS

WARNINGS : Service should not be attempted by anyone unfamiliar with the necessary precautions on this monitor. The following precautions are necessary during servicing.

1) For continued safety, do not attempt to modify the circuit board.
2) Disconnect the AC Power before servicing.
3) When the Monitor is operating, do not touch any heatsink on the Chassis as it is self-heated.

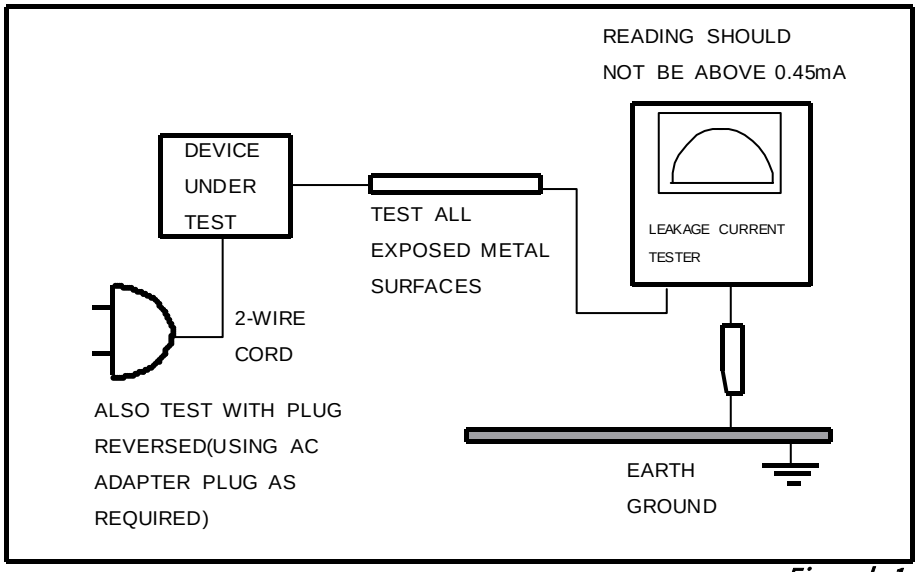
1-1-1 FIRE & SHOCK HARZARD

1) During servicing, pay attention to the original wires whether it is uncoated or undressed, especially the wires in the high voltage circuit section. If there is any uncoated or melted wire is found, then please do not try to replace the related parts, and wait for the qualified service person's coming.

2) Many electrical, mechanical parts in this monitor have special safety-related characteristics for protection against shock hazard and others. These characteristics are often passed unnoticed by a visual inspection and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage wattage,etc.
Replacement parts which have these special characteristics are identified in the manual and supplements by shading on the schematic diagram and the parts list.

3) When replacing Chassis, always be certain that all the protective devices are installed properly.

4) leakage current check (figure 1)



Figurel 1

(TEST METHODE)

1-1-2. X-RADIATION

WARNING : The only potential source of x-radiation is the picture tube, however when the high voltage. Circuitry is operating properly, there is no possibility of an x-radiation problem. The basic precaution is to keep the high voltage at the factory recommended level.

1) To measure the high voltage, use a high-impedance high-voltage meter.
Connect(-) to chassis and (+) to the CRT anode cap.

2) Turn the contrast control max. clockwise.

3) Measure the high voltage. The high voltage meter should indicate the following factory recommended level

4) If the actual level exceeds the max. factory set level, then immediate service is required to prevent the possibility of premature failure of components

5) To prevent X-RADIATION possibility, it is essential to use the specified picture tube.

6) The nominal high voltage is 24KV and not exceed 27KV at zero beam current at rated voltage.

1-2. SERVICING PRECAUTION

WARNING 1 : First, reading "safety precaution" section of this manual. If unforeseen circumstances create conflict between the servicing precautions and safety precaution, always follow the safety precautions.

WARNING 2 : A high voltage VR replaced in the wrong direction may cause excessive X-RAY Emitting.

WARNING 3 : An electrolytic capacitor installed which the wrong polarity might explode.

1) Servicing precautions are printed on the label, and should be followed closely.

2) Always unplug the AC power cord from the AC power source before attempting to remove or reinstall any component or assembly, disconnect PCB plugs or connectors, connect all test Components in parallel which an electrolytic capacitor.

3) After servicing, always check that the screw, components and wiring have been correctly reinstalled. Make sure that the area around the serviced part has not been demaged.

4) Check the insulation between the blades of the AC plug and accessible conductive parts(example : metal parts, input terminals)

5) Never touch any of the locked B+ voltage. Do not apply AC power to the unit(or any of its Assemblies) unless all solid-state heatsinks are correctly installed.

6) Always connect a test instrument's ground lead to the instrument chassis ground before connecting the positive lead; always remove the instrument's ground lead last.

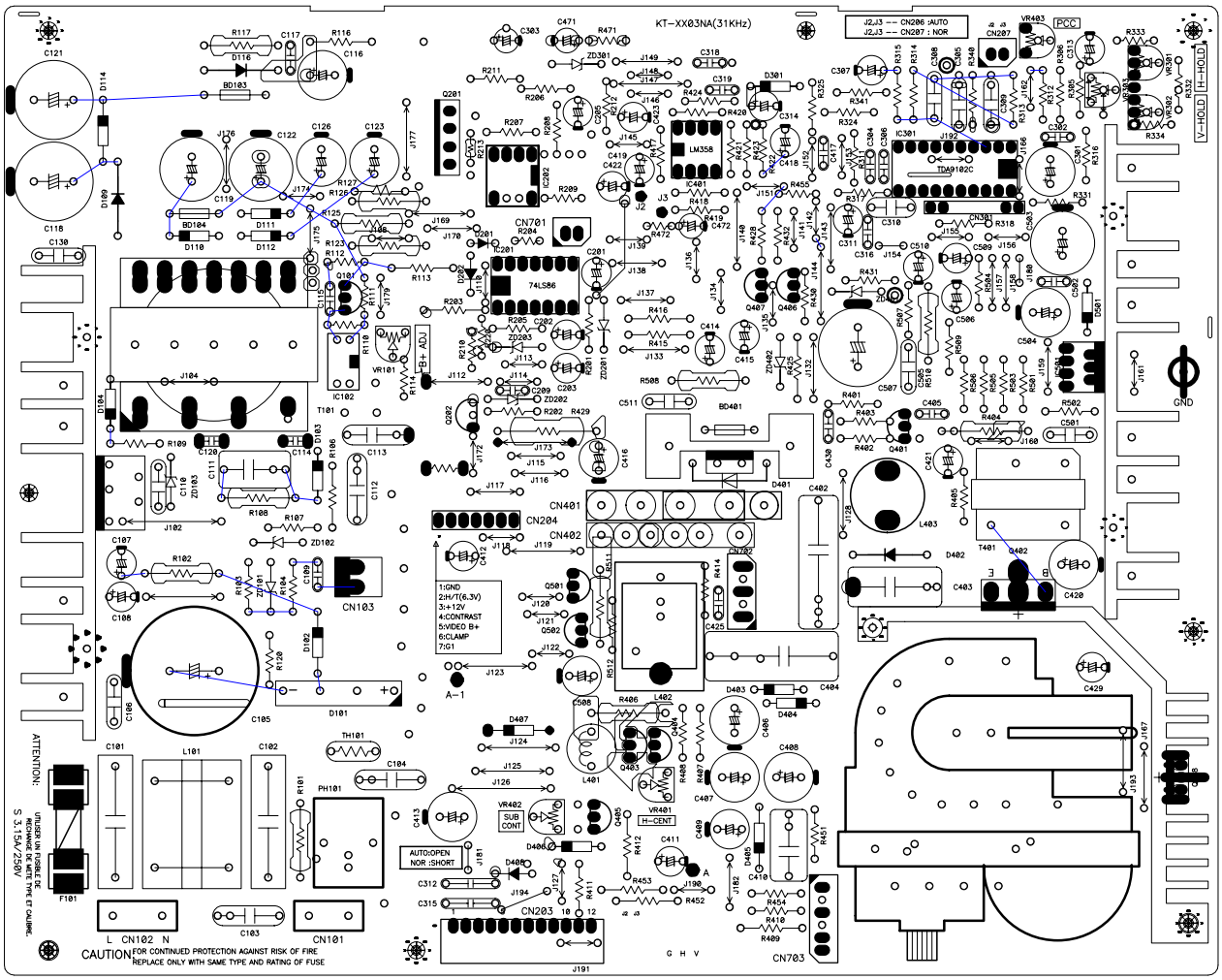
2.Product Specifications

2-1 SPECIFICATION

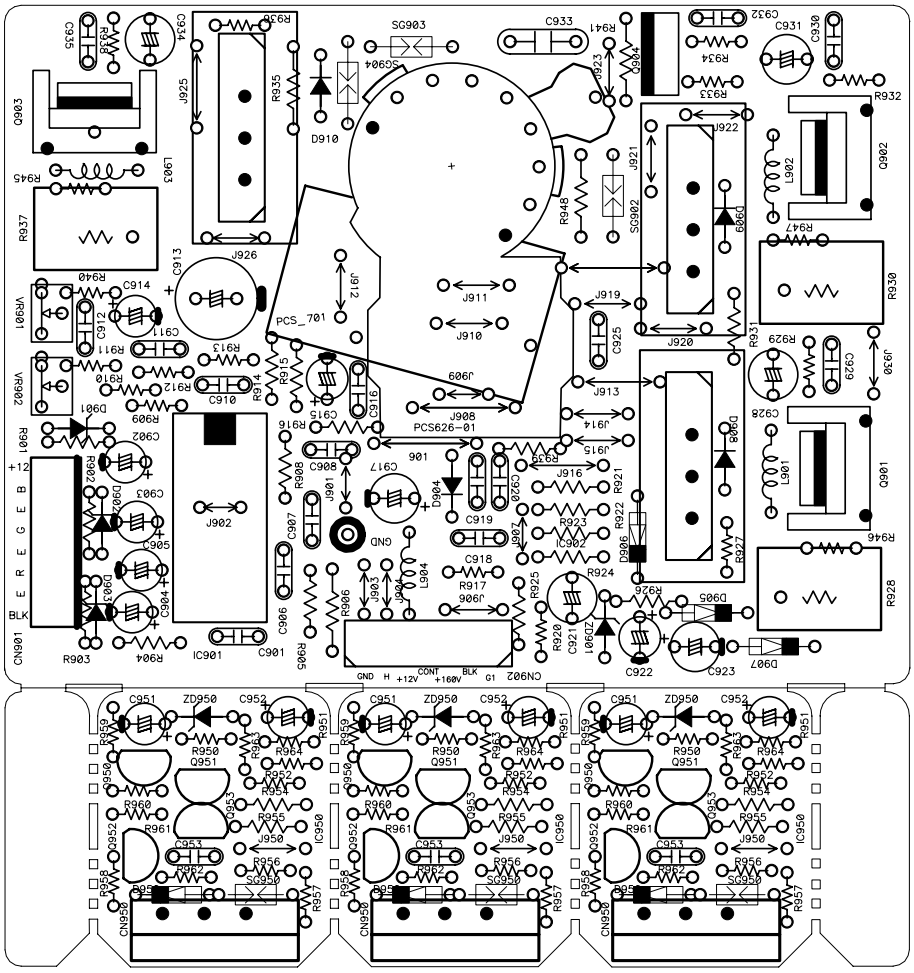
PARAMETER	MIN	TYP	MAX	UNITS
OPERATING VOLTAGE	100	115/230	230	VAC
OPERATING POWER		85	90	WATTS
LEAKAGE CURRENT TO CHASSIS GND AT250VAC,50/60Hz(LINE/NATU,IN COMMON)		< 0.40	0.45	mA
HI-POT LINE/NEUT, IN COMMON		< 2.0	2.4	mA
OPERATING TEMPERATURE	10		60	DEGREE
REL,HUMIDITY OPERATING	10		90	%
MAGNETIC SHIELD	INTERNAL			
DEGAUSSING	MANUAL TYPE			
VIDEO SIGNAL	+0.7Vpp, 75 Ohm MONITOR TERMINATIONS			
RASTER DIM ADJUST RANGE VERTICAL	< 190		> 290	mm
RASTER DIM ADJUST RANGE HORIZONTAL	< 300		> 350	mm
MODE	640*480			
PINCUSHION(ALL BRIGHTNESS)			3.0	%
MIS-CONVERGENCE CENTER		0.25	0.3	mm
MIS-CONVERGENCE CORNERS		0.35	0.45	mm
VERTICAL				
SCAN RATE		60/70		Hz
HOLD IN RANG			±5	Hz
SYNC +5V 74LS LEVELS		5.0	5.0	VOLTAGE
LOW	0.0	0.0	0.6	VOLTAGE
NON-LINEARITY			5	%
HORIZONTAL				
SCAN FREQUENCY	31.2	31.4	31.6	Khz
HOLD IN RANG			±500	Hz
SYNC POLARITY	POSITIVE			
SYNC +5V 74LS LEVELS	5.0	5.0	5.0	VOLTAGE
LOW	0.0	0.0	0.6	VOLTAGE
NON-LINEARITY			5	%
WHITE BALANCE & LUMINANCE	X= 281 ±20 y= 311 ±20 Y = 10 ±3 F/L Y = 56 ±5 F/L			

2-2 PCB DIMENSIONS

1) MAIN PCB

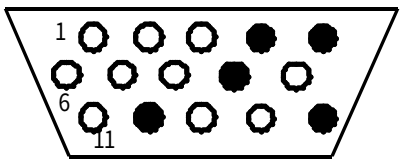


2)SOCKET PCB



1998 11 24 SOCKET PCB REV A

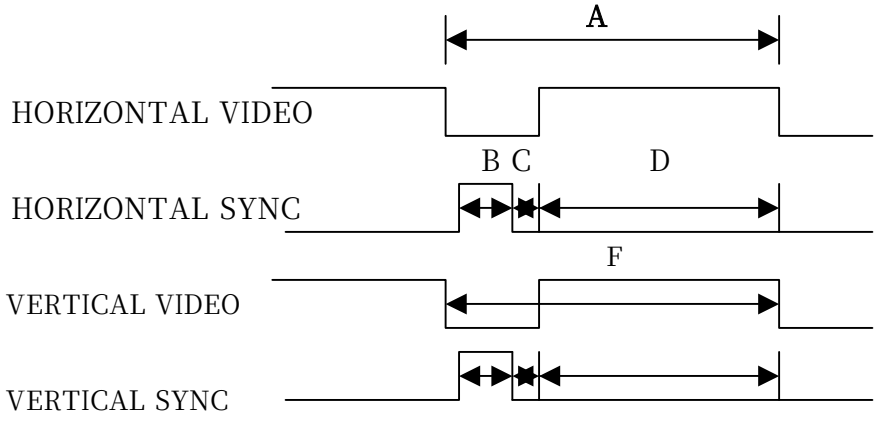
2-2-1 15-PIN SIGNAL CABLE CONNECTOR



2-2-2 PIN DESCRIPTION

P_NO	PIN_NAME	P_NO	PIN_NAME
1	RED VIDEO	9	NC
2	GREEN VIDEO	10	SHIELD GND
3	BLUE VIDEO	11	SHIELD GND
4	NC	12	NC
5	NC	13	H-SYNC
6	RED GND	14	V-SYNC
7	GREEN GND	15	NC
8	BLUE GND		

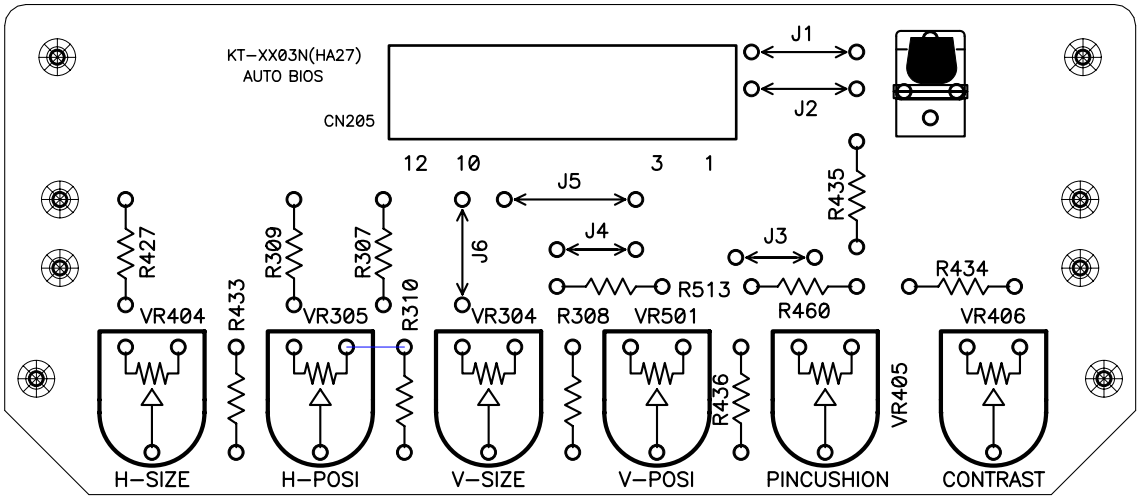
2-3 TIMING CHART



NO				1	2	3	4
MODE				IGT	IBM VGA	IBM VGA	IBM VGA
RESOLUTION			H	640	640	720	640
			V	480	350	400	480
SYNC POLARITY			H	POSI	POSI	NEGA	NEGA
			V	POSI	NEGA	POSI	NEGA
H	FREQUENCY		kHz	31.469	31.469	31.469	31.469
	PERIOD		μs	31.777	31.777	31.777	31.777
	SYNC		μs	3.813	3.813	3.813	3.813
	B/P		μs	1.907	1.094	1.907	1.907
	ACTIVE		μs	25.422	25.422	25.422	25.422
V	FREQUENCY		Hz	59.941	70.087	70.087	59.941
	PERIOD		ms	16.683	14.268	14.268	16.683
	SYNC		ms	0.064	0.064	0.064	0.064
	F/P		ms	1.049	1.907	1.080	1.049
	ACTIVE		ms	15.253	11.122	12.711	15.253
FIXEL FREQUENCY			MHz	25.175	25.175	28.322	25.175
INTERACE				NO	NO	NO	NO

3. OPERATING INSTRUCTIONS

3-1 LOCATION FUNCTION OF CONTROL PCB ASS'Y



4.ADJUSTMENT

4-1 ADJUSTMENT CONTROL

1) Orientation

When servicing, always face the monitor to the east

2) Warm-up time

The monitor must be on for 30 minutes before starting alignment. Warm-up time is especially critical in color temperature and white balance adjustments.

3) Signal

Analog 0.714vpp positive at 75Ω, internal termination.

4) B+ line adjustment

Signal in; adjust in order to 54 ± 0.2V

5) Screen adjust(FBT) : 550 ± 20V

4-2 DISPLAY CONTROL ADJUSTMENTS

A. SELECT H-SIZE FUNCTION, ADJUST TO THE HORIZONTAL SIZE IS 350mm±3mm(V/R404)

B. SELECT V-SIZE FUNCTION, ADJUST TO THE VERTICAL SIZE IS 250mm±3mm(V/R304)

C. SELECT H-POSI FUNCTION, ADJUST TO CENTER THE PATTERN WITHIN THE RASTER (V/R305)

D. SELECT V-POSI FUNCTION, ADJUST TO CENTER THE PATTERN WITHIN THE RASTER(V/R501)

E. SELECT S-PCC FUNCTION, ADJUST SIDE PINCUSHION ON THE EDGE.(V/R405)

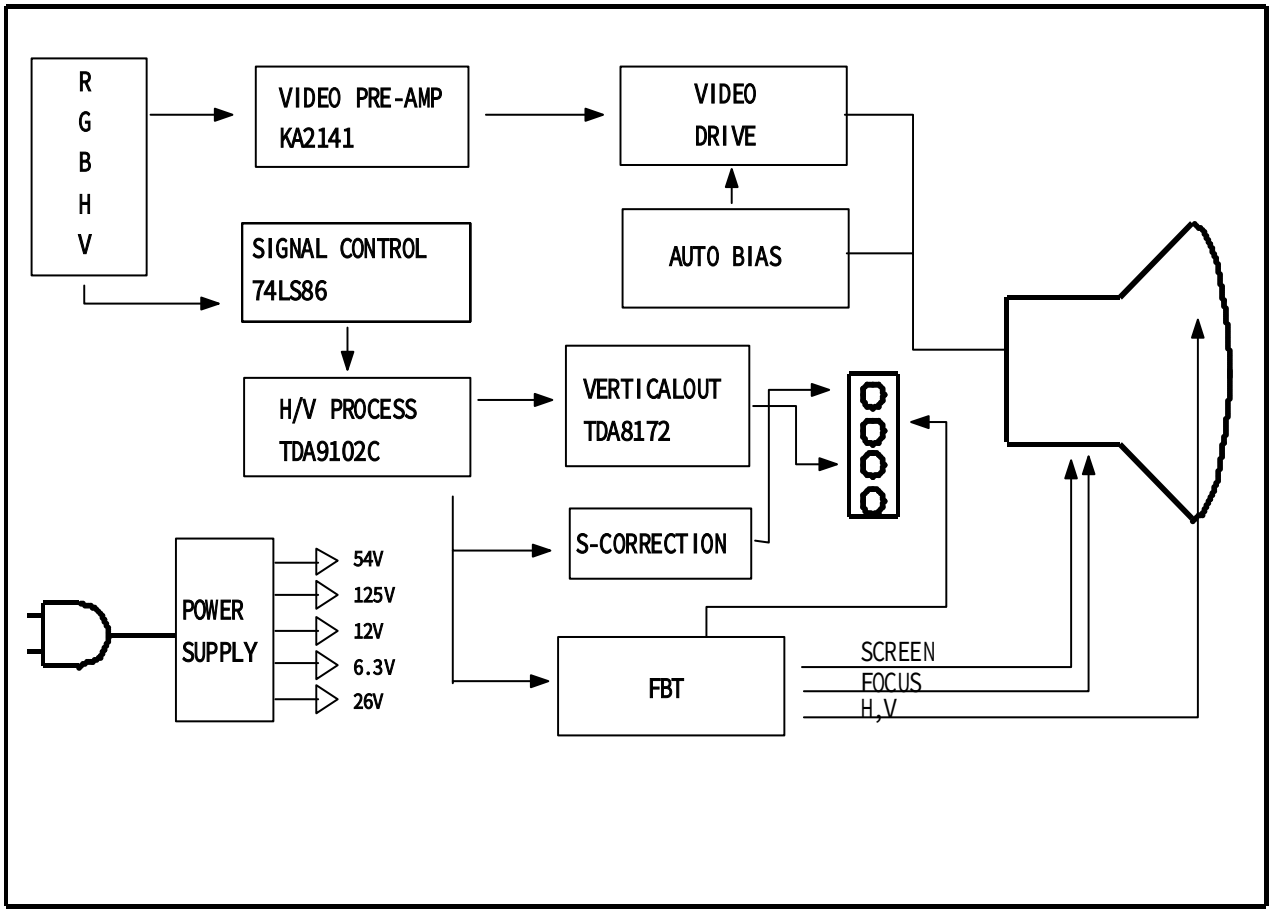
F. Remove H-SYNC to make H–SYNC flow and vary V/R301 to adjust frequency at 31.5 ±0.2 Khz.

G. Remove V-SYNC to make V-SYNC flow and vary V/R302 to adjust vertical frequency at 56 ±0.5Hz.

Adjust other specific lines at 47 ±0.5Hz.(adjust it differently according to the request of buyer.)

H. ADJUSTMENT FOCUS1 VR & FOCUS2 VR ON FBT TO THE OPTIMUM.

5. BLOCK DIAGRAM



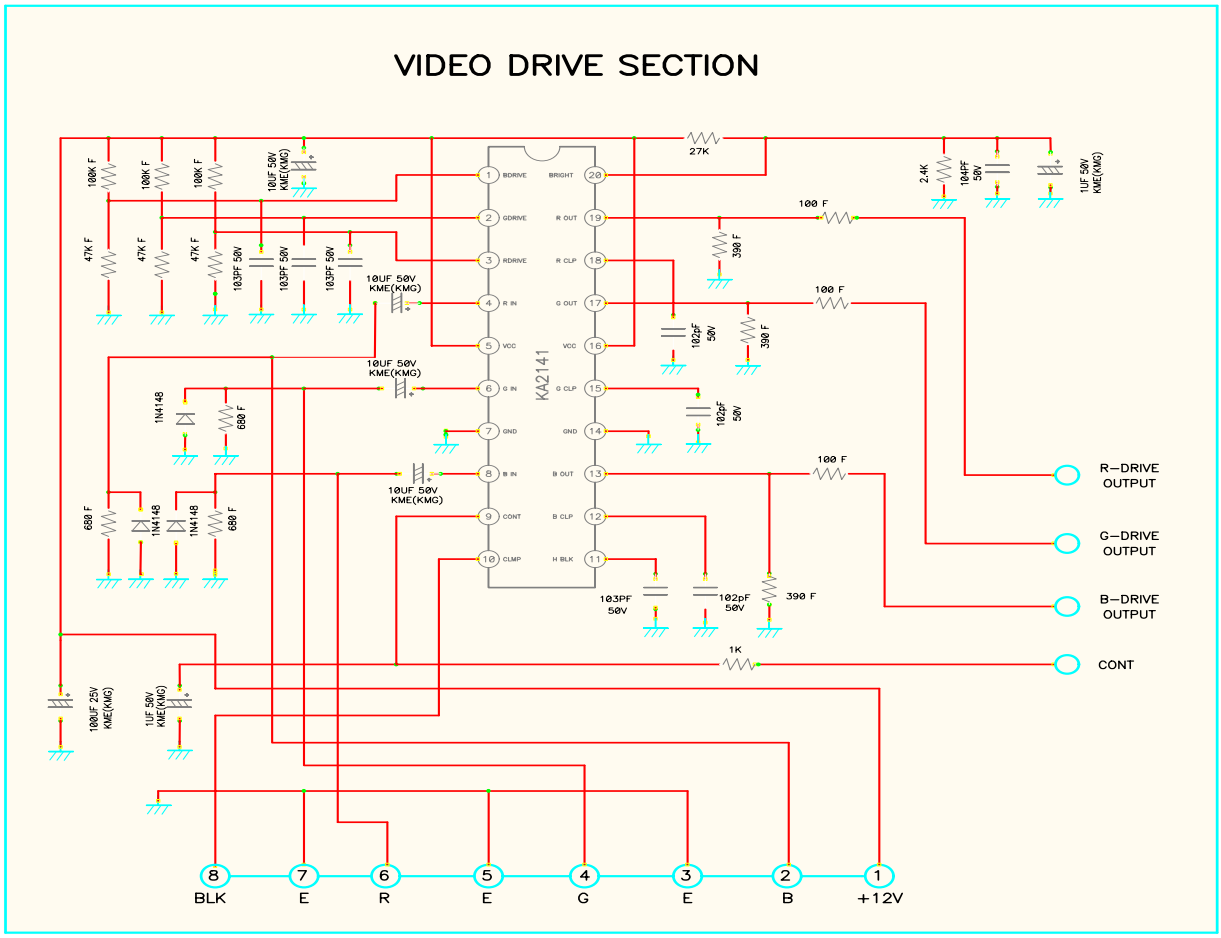
6. GENERAL THEORY OF OPERATION

6-1 BLOCK DIAGRAM

Above is the block diagram of the monitor as a whole. Each major section is presented in a block. The individual circuit that makes up the section is covered later and is not shown here. This simple block diagram will allow you a fundamental understanding of the complete monitor. This will help when covering the sections individually. The process from video signal to video display starts with the video signal generated from the source.

The signal is composed of information that is fed into various sections of the monitor the following diagrams are based on 17"/19" VGA auto bias monitor and are included for reference only. Actual circuit may be different. Please see update schematic and parts list enclosed.

6-2 VIDEO DRIVE SECTION

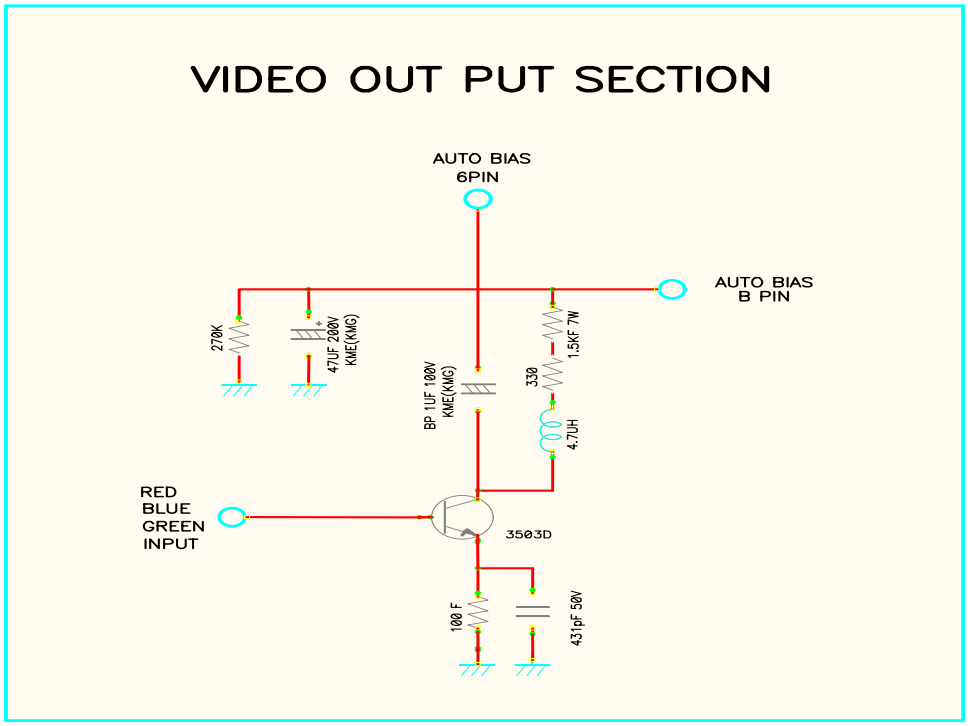


Video signal (0.7V PP) supplied from "CN901 Pin 2 (BLUE), 4(GREEN), 6(RED)" is supplied to IC901 Pin 4, 6, 8 through "C902, C903, C905." IC901 performs VIDEO PRE AMP and its amplitude is “determined by DC BIAS of Pin 1, 2, 3. Pin 9 (Contrast) controls its output video level.

Video signal passing through the DCBIAS and the Contrast Control is output to Pin 19(RED), Pin 17 (GREEN), Pin 13(BLUE) and supplied to video output circuit.

For details, see KA2141 Date Book.

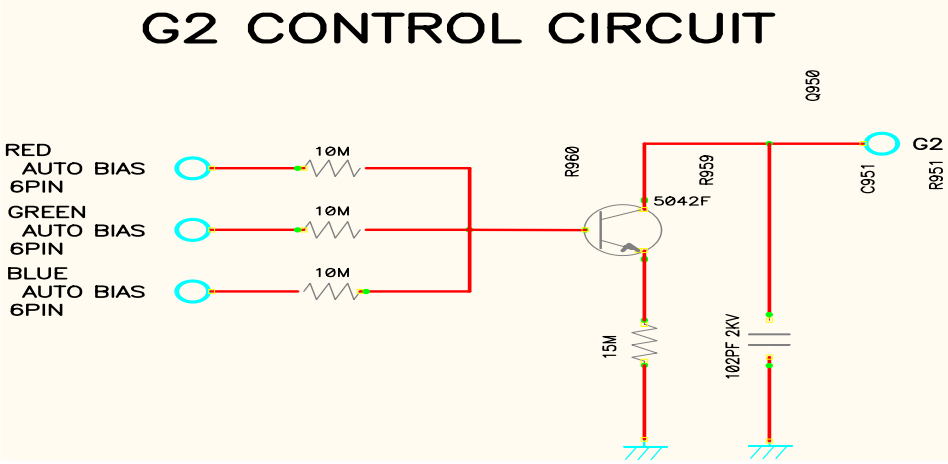
6-3 VIDEO OUT PUT AMP SECTION



Signal supplied from video PRE AMP is sent to Q903 base. The amplitude of Q903 is determined by emitter resistor R938 and collector resistor R937 and R945. Circuit of L903 and C935 are configured for prevention from and compensation of loss of high frequency.

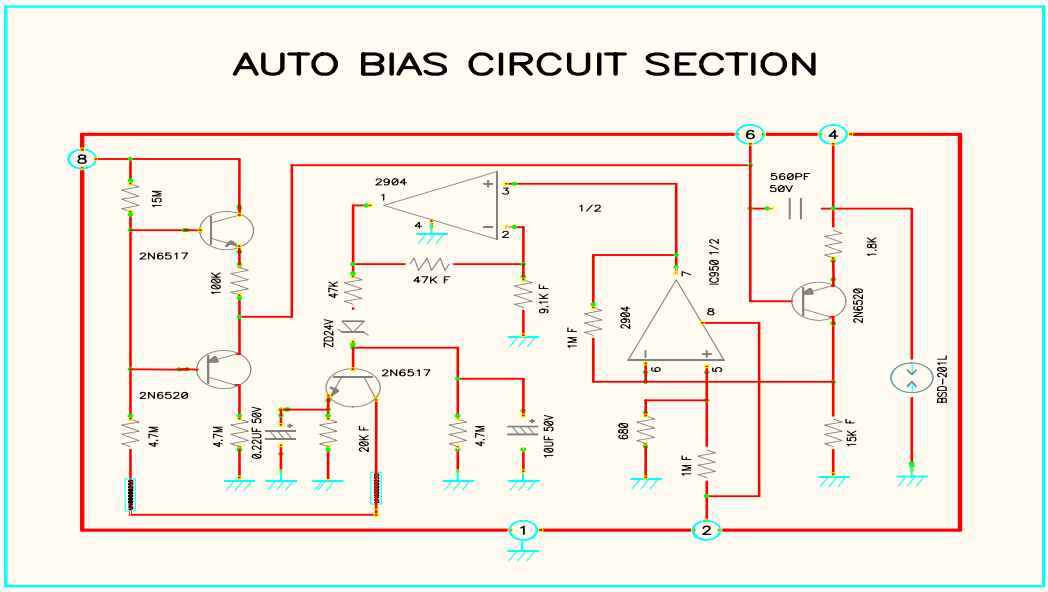
Video output amp is composed of three circuits of R. G and B. The above description is about RED circuit. For description of GREEN and BLUE circuit, see the entire circuit because LOCATION Numbers of the parts are differently applied. In A/S or when changing values of the parts, apply them with full understanding of parts’ characteristics. R938 and R937 are 1% (for temperature compensation) and R945 is 5% (temperature compensation for TR Q903), and for C935, make sure to use a capacitor of NPO type.

6-4 G2 CONTROL CIRCUIT SECTION



G2 control circuit complements operations of auto bias circuit and when replacing CRT, it is not necessary to adjust screen voltage. For circuit operations, R. G. B cathode voltage of CRT is detected through R936, R931 and R933. When the voltage is applied to Q904 base, Q904 automatically controls screen voltage to maintain screen brightness at a constant level.

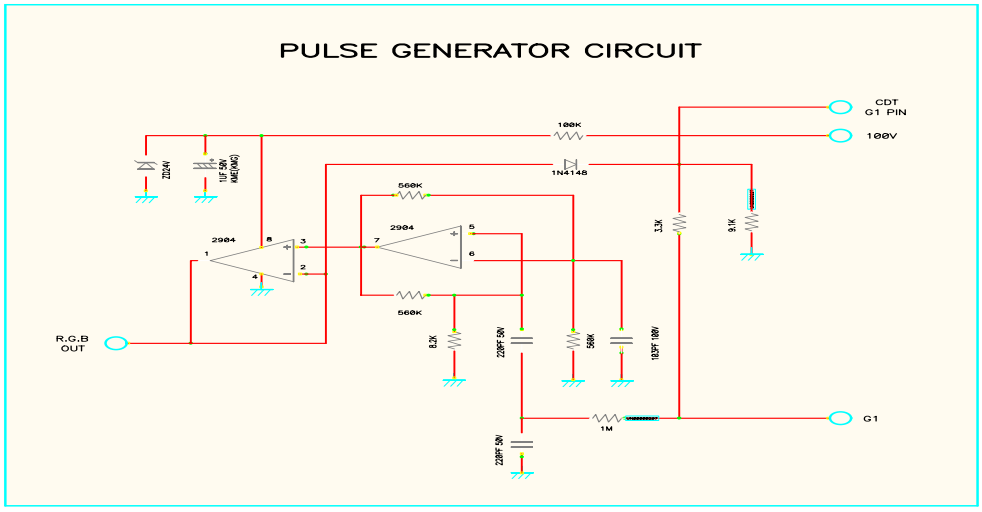
6-5 AUTO BIAS CIRCUIT SECTION



Auto bias circuit automatically controls BIAS voltage by detecting the separation between cathode of CRT and grid 1, and compensates for color changes in warm-up to maintain them constantly. Also, when using CRT for a long period, the circuit lengthens life of CRT by compensating for deterioration of emission and helps to replace CRT without any other adjustment in A/S. SUB PCB Pin 4 is connected to cathode of CRT.

CRT cathode is composed of three electrodes of R, G and B and GRID 1 electrode is also composed of three electrodes. Three electrodes maintain different separations from each other and the voltage proportional to each separation should be supplied to obtain the constant color. Because operational principle of circuit is same for R, G and B, RED circuit will be described instead of describing all circuits. When heater voltage is supplied to CRT and surface temperature of the nearest CRT cathode exceeds 900℃, CRT cathode emits heat electrons. At this time, despite of that there are a few differences due to the conditions of voltage supplied to GRID 1, GRID 2 and GRID 3 and 5, heat electrons generally move to CRT face and current is generates to the opposite direction. The current appears on the surface of CRT RED cathode. SUB PCB Pin 4 is connected to RED cathode and current and voltage passing through R962 change in Q953 emitter. This changed current appears in the form of wave signal on Q953 collector, and sent to IC950 to be amplified. IC950 amplifies the signal at rate of R956, R957 and R955 and sends it to IC950 Pin 3 for the second amplification. Second amplification of IC950 is made at rate of R952 and R964 and pulse is converted to DC level by ZD950 and C952. The converted DC voltage is sent to SUB PCB Pin 6 by controlling Q951, Q952 and Q950 and controls Q953 base. When the voltage of Q953 base changes, emitter voltage changes and controls emission of heat electrons from CRT cathode. This operation is made through feedback loop and maintains a constant value with repeat.

6-6. PULSE GENERATOR CIRCUIT

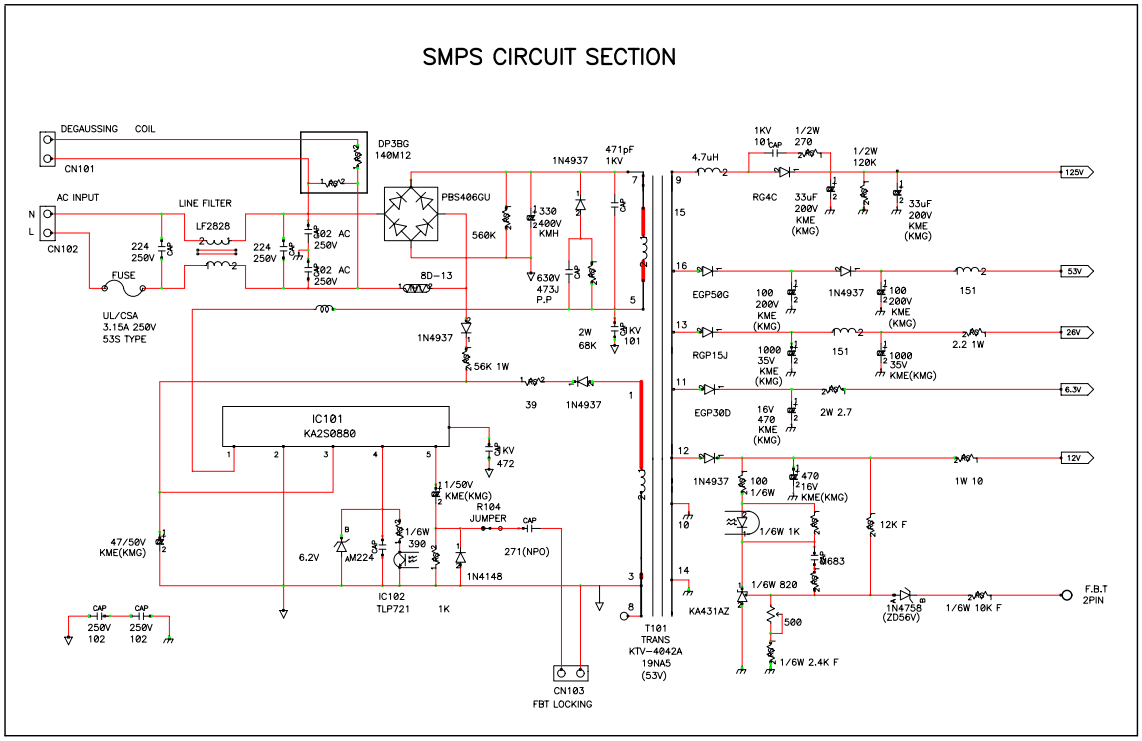


Pulse generator circuit supplies control power to auto bias circuit. The circuit makes and supplies pulse in order for auto bias circuit to operate only during blanking period for preventing error. For detailed timing chart, see waveform of Circuit Diagram.

The circuit is supplied horizontal & vertical blank pulse through R917, and controls the delay and the width of the waveform for easy operation of auto bias at the pulse oscillator circuit, which is composed of IC902, C920, R921, R923,

R924 and R922, and outputs it to IC902 Pin 7. Output waveform, with not much current, is amplified with using OP amp and output to Pin 1. Finally it is supplied to auto bias control circuit.

6-7 SMPS CIRCUIT SECTION



Power supply is composed of line filter, switching amp and switching trans circuit. Line filter circuit removes noise element of power line supplied from outside and prevents noise generated in switching amp from flowing out to external power line. The circuit is made up of C101, L101, C102, C103 and C104."

AC voltage supplied through line filter circuit is supplied to D101 and converted to ripple voltage, and converted to DC through the operation of C105.

"Switching circuit is made up of IC101 peripheral circuits and IC101 performs control and switching operations such as oscillation, over-voltage protection and overload protection. DC rectified through D102 and lowered passing R102 is supplied to IC101 3Pin(Vcc), then IC101 start operating and outputs pulse.

NO. 3 Pin has over-voltage shutdown function embedded in chip. if high (operates stably at approximately 23 ~ 35V) voltage or low voltage is input, it stops operating temporarily to protect circuit, and if high load is applied momentarily, embedded overload shutdown function blocks circuit operation and protects circuit to maintain stable operation in outputting pulse.

IC101 pin 1 has OSC function embedded in chip so that, at the first time when power switch is turned on, embedded OSC oscillates to drive circuits. After the initial operation, it inputs pulse separated flowing out from FBT in IC101 Pin 5 to match frequencies of monitor and power supply so that it minimizes noise from oscillation and from interference between frequencies of monitor and power supply. Also, when distance between trans and deflection yoke is near, it prevents noise from being generated on screen.

The switching trans changes and supplies the generated pulse adequately for voltage of each part of monitor, and IC101 Pin 4 receives feedback for difference in voltages output to terminal receiving feedback for variations of voltage, and increases voltage when it is low, and lowers when it is low, so supplying the secondary voltage stably.

T101 secondary side receives the output of the pulse provided to the primary side. T101 pin 9 rectifies the voltage at the D116, smoothes it at C116 and outputs 125 V and provides it to the video output terminal. R117 and C117 are the circuits to improve the FCC and smoke noises.

"T101 Pin 9 is made up of +125V D116, C116, J175 and R116 circuit."

"Pin 10 and Pin 14 are GNG on the secondary voltage. "Pin 11 supplies voltage to CRT heater in +6.3V line and its circuit is composed of D111, C123 and R123.

Pin 12 supplies operating voltage of video pre amp, horizontal & vertical OSC IC in +12V line, and its circuit is composed of D112, C126 and R126.

With regard to R111, IC102, Q101, R110, C115, R112, VR101 and R114, in order to supply voltage to the second side stably, the voltage provided to IC102 through R111 oscillates the light emission element and generates the potential and feeds back it to IC101 pin4. Then, it maintains and controls a stable voltage of the secondary side. Also, they can control B+ voltage using Q101 V/R101, so controlling desired voltage.

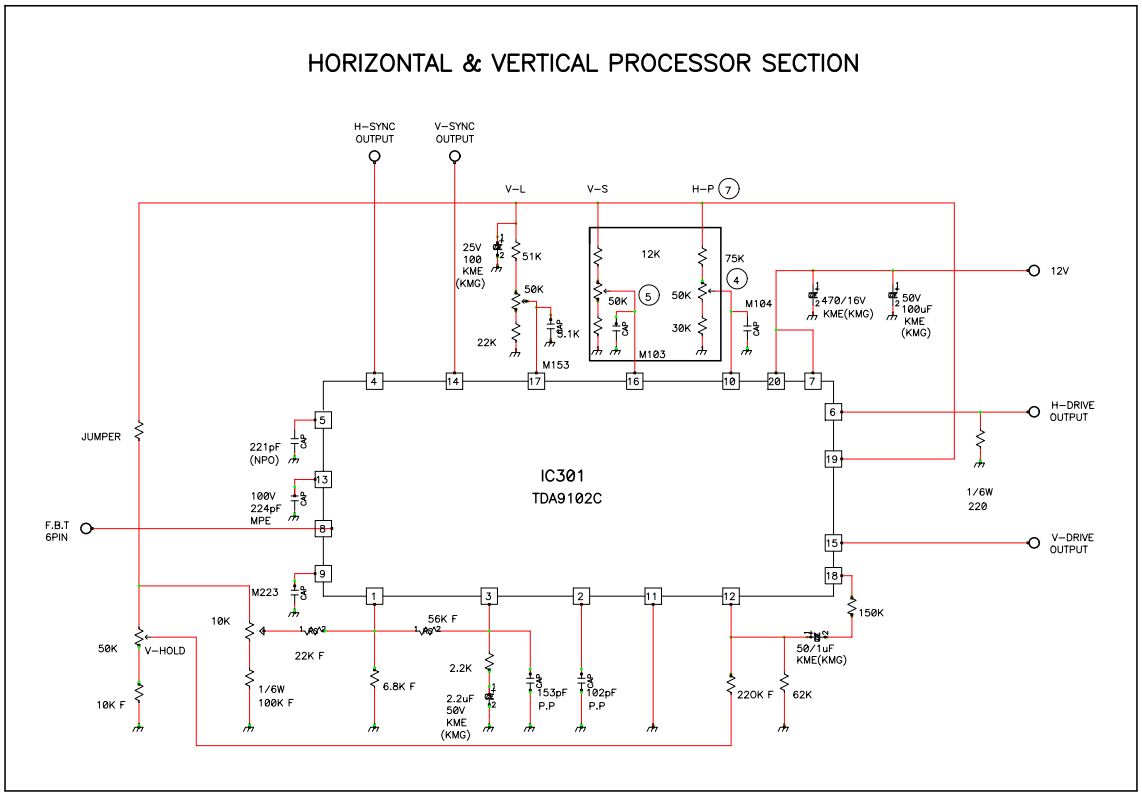
Pin 13 is a circuit supplying B+ of vertical output amp and horizontal drive in +26V line and its circuit is composed of D110 and C119, BD104 and C122.

Pin 15 supplies B+ voltage of FBT in 54V line and its circuit is composed of D109, C118, D114 and C121. Pin 16 is output for compensating for voltage according to frequency changes and its circuit is composed of D108, BD101, C124, D118, R118 and Q102. Because, with horizontal frequency, B+ of FBT varies with Q102 operation, this is a circuit for compensating for this.

Other circuits of power supply constitute manual degaussing circuit with PH101.

This is a circuit using temperature characteristics of PH101, and when power is turned on, high voltage is applied momentarily and current flows. At this time, heat is generated and temperature rises. With rising temperature, as much as resistance increases and after about 20 seconds, current stops flowing and this circuit stops operating.

6-8 Horizontal/Vertical Processor Section



IC301 (TDA9102C) oscillates with embedded OSC, outputs vertical and horizontal frequency in free running, and even though SYNC is not supplied from outside, it can operate.

IC301 supplies 12V voltage to Pin 20 to drive it.

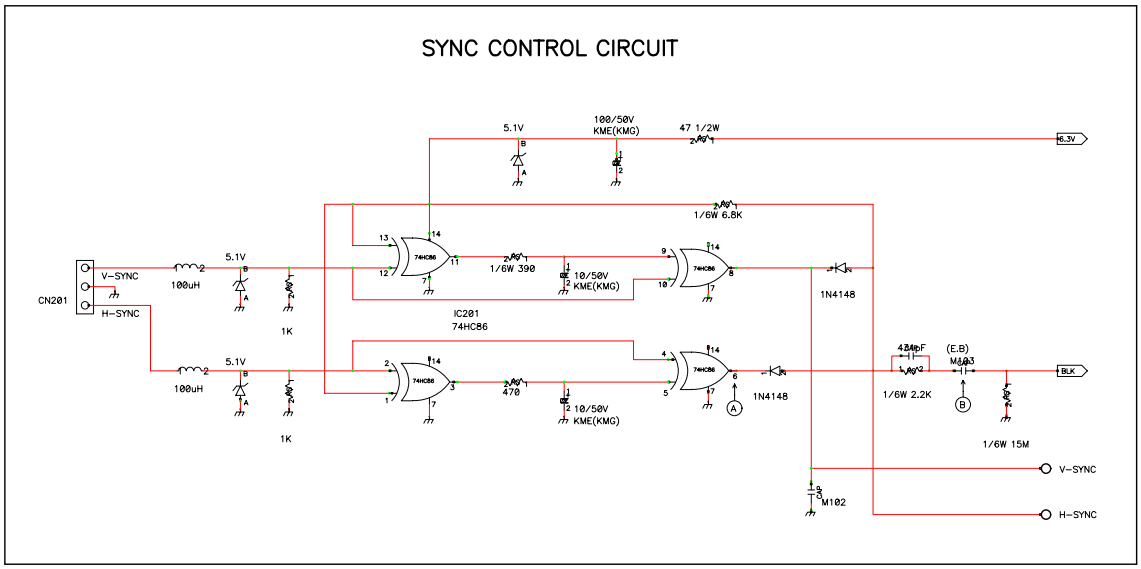
With Pin 1 and Pin 2, in free running, horizontal oscillation frequency is determined and with R313 and C309, free running frequency is determined.

Pin 3 compares and matches SYNC phase input from outside and phase of embedded OSC, and it performs mainly with R315, C307, C308, R314 and R312, and adjusts DC level with VR301.

Pin 4, input terminal of horizontal SYNC, is compatible with TTL and always triggers negative.

Pin 5 supplies sync input from outside to Pin 5 through embedded interface and at this time, according to capacitor value of C305 connected to Pin 5, pulse width is determined.
Pin 6 outputs horizontal output pulse and its range is from 27Khz to 70Khz.
Pin 7.20 is used as terminal supplying B+ of device.
Pin 8 receives feedback for pulse from No. 6 terminal of FBT, compares and detects it so that it operates in sequence of detected feedback to maintain high-voltage constantly.
Pin 9 determines gradient of waveform in oscillation cycle of oscillator and is determined by C306 capacitor value.
Pin 10 controls H-phase by adding or subtracting it with DC voltage and its circuit is composed of C308, R310, R309 and VR305.
Pin 11 is used as GND of IC301.
Pin 12 and Pin 18, terminal controlling vertical frequency, is controlled with DC level and its circuit is composed of R318, C311, R317, R316, VR301 and R332.
Pin 14 is used as input terminal of vertical SYNC and always receives negative signal.
Pin 15 is used as vertical output terminal.
Pin 16 is a terminal used to control the vertical size and its vertical size varies with DC level input to Pin 16 and is composed of C315, R307, R308 and VR304.
Pin 17 controls vertical linearity according to DC level input to Pin 17 and is composed of R305, C313, C302, R306 and VR303.
Pin 19 is a terminal used to supply the reference voltage.

6-9. SYNC CONTROL CIRCUIT



This SYNC control circuit converts SYNC to maintain constant level is always input regardless whether SYNC is input or not.

For the function, the circuit is composed of chip embedding four exclusive or gate circuits. Pin 14 is a terminal supplying Vcc for driving chip.

Pin 1, 2, 4, 5, 9, 10, 12 and 13 are SYNC input terminals.

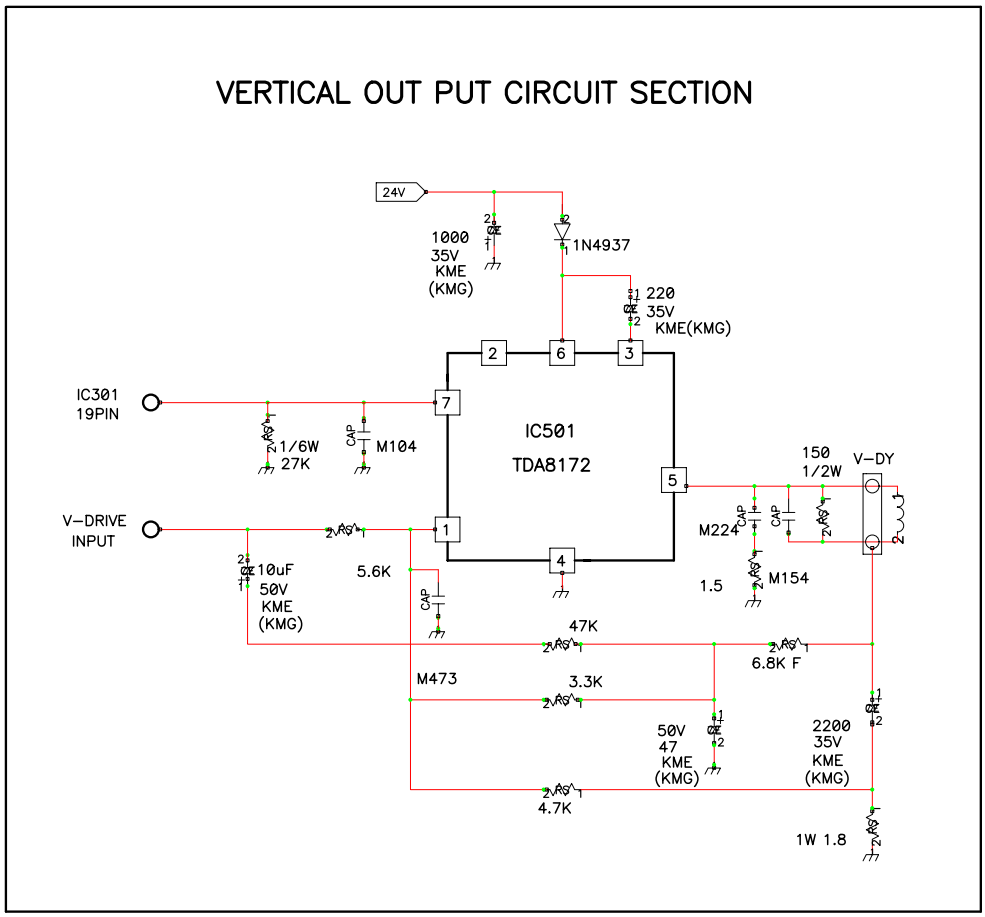
Pin 3, 6, 8 and 11 are output terminals. (for details, see FUNCTION TABLE.)

※ FUNCTION TABLE

◆ EACH GATE

IN-PUT		OUT-PUT
(Pin 1,5,10,12)	(Pin 2,4,9,13)	(Pin 3,6,8.11)
L	L	L
L	H	H
H	L	H
H	H	L

6-10 VERTICAL OUTPUT CIRCUIT SECTION



IC501 amplifies sawtooth waveform output from TDA9102 Pin 15 and supplies it to deflection yoke. IC501 uses Pin 5 to output the amplified wave. IC501 Pin1, receiving sawtooth waveform output from TDA9102 Pin15, amplifies and output it through amplifier embedded in chip and supplies it to reflection yoke. The outputting terminal is composed of C505, C511 and R508 R507.

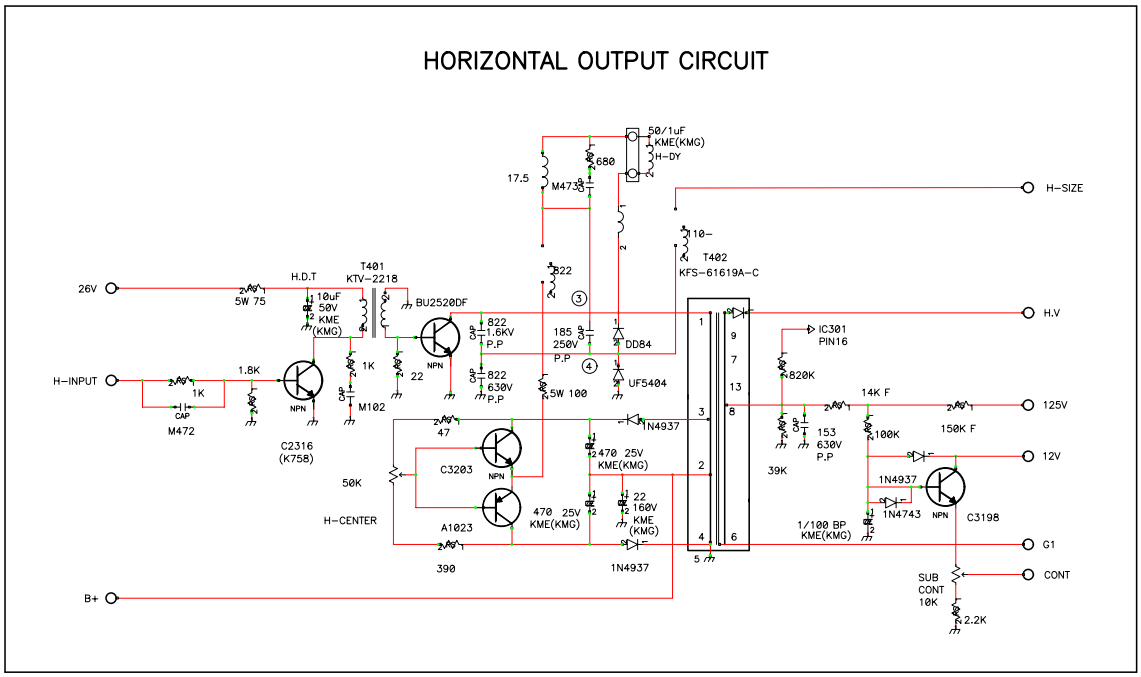
Pin 2 is a terminal supplying reference voltage.

Pin 3 is pulse generator and Pin4 is used as GND.

Pin6, as B+ terminal of TDA 8172 device, supplies 24V voltage and drives circuit. It supplies current necessary for vertical deflection through C503 and D501.

R508 and C511 is a circuit used for DAMPING to prevent current flowing in DY coil from distorting during switching.

6-11 HORIZONTAL DRIVE & OUTPUT CIRCUIT SECTION



Horizontal drive receives pulse from TDA9102C Pin 6 (varies according to frequency) and applied to Q401 base. Then Q401 repeats on and off according to the pulse. At this time, pulse is generated in T401 and operates T401.

When T401 operates, pulse separated from the secondary side of T401 can drive horizontal so that it supplies pulse to Q402 base, and repeats on and off by pulse and the operation can drive FBT. C402 and C403 generates pulse and supplies it to horizontal deflection, and 900V~1000V Vcp voltage is applied to T402 Pin 1 and this voltage varies with voltage supplied to T402 Pin 2 (this voltage is supplied from SMPS according to horizontal frequency). The supplied Voltage is raised in T402 and output as high-voltage, screen voltage and focus voltage.

V/R401, horizontal raster position control VR, receives - voltage from T402 Pin 3 and + voltage from Pin 4, and varies DC voltage with Q403 and Q404 to move horizontal raster toward the right and left side.

6-12 KT-1903NA adjustment method

1. B+ voltage adjustment method

1) Measuring terminal : D114 CATHODE side
2) Adjusting V/R : V/R101
3) Adjusting voltage : 54 ± 0.2V
4) Measuring condition : AC 120 V, 60 Hz ,CROSS HATCH PATTERN
5) Other voltage : 6.2 ± 0.1V 122 ± 0.5V

2. SCREEN voltage adjustment method

1) Measuring terminal : C933 (SCREEN)
2) Adjusting V/R : F.B.T SCREEN V/R
3) Adjusting voltage : 550 ± 5V
4) Measuring condition : CROSS HATCH PATTERN

3. HIGH VOLTAGE adjustment method

1) Measuring terminal : CRT ANODE
2) Adjusting voltage : 23.4 Kv ± 300 V
3) Measuring condition : CROSS HATCH PATTERN
Screen size : at the full scan (horizontal frequency :31.5 Khz)

4. CONTRAST adjustment method

1) Measuring terminal : center of screen
2) Adjusting V/R : V/R402,V/R406,V/R407
3) Measuring condition : SCREEN voltage : 550 ± 5V
VIDEO input voltage : 0.7V
Screen brightness : 15F/L ~ 55F/L

4) Adjusting method :To supply Window pattern by operation of SIGNAL SOURCE
To adjust V/R 402 for brightness into 55F/L at the Max of V/R 406
To adjust V/R 407 for brightness into 15F/L

5. Horizontal RASTER position adjustment

1) Adjustment V/R : V/R401

2) Adjustment position : center of screen

6. Check of coordinates value

1) Adjustment position : center of screen(measured as CA-100 in CRT face)

2) Measuring condition : After adjusting Back Roaster into 0.1 F/L by varying of screen at Cross Hatch, measurement is made at max 70 F/L in Window pattern

X : 281 ± 20

y : 311 ± 20

Y : 55 F/L

(The difference of X, y value should be within MIN 15 , MAX 35.)

7. Other V/R Adjustment

1) Measuring condition : BS-120 CROSS HATCH PATTERN (31.5 Khz 640X480 MODE)

2) Measuring method :	**H-SIZE**	**MIN**	**below 320**
		MAX	**over 350**
	V-SIZE	**MIN**	**below 200**
		MAX	**over 250**
	H-POS	**over 20mm from center**	
	V-POS	**over 20mm from center**	

8. HIGH VOLTAGE REGULATION CHECK.

1) Measuring terminal : CRT ANODE

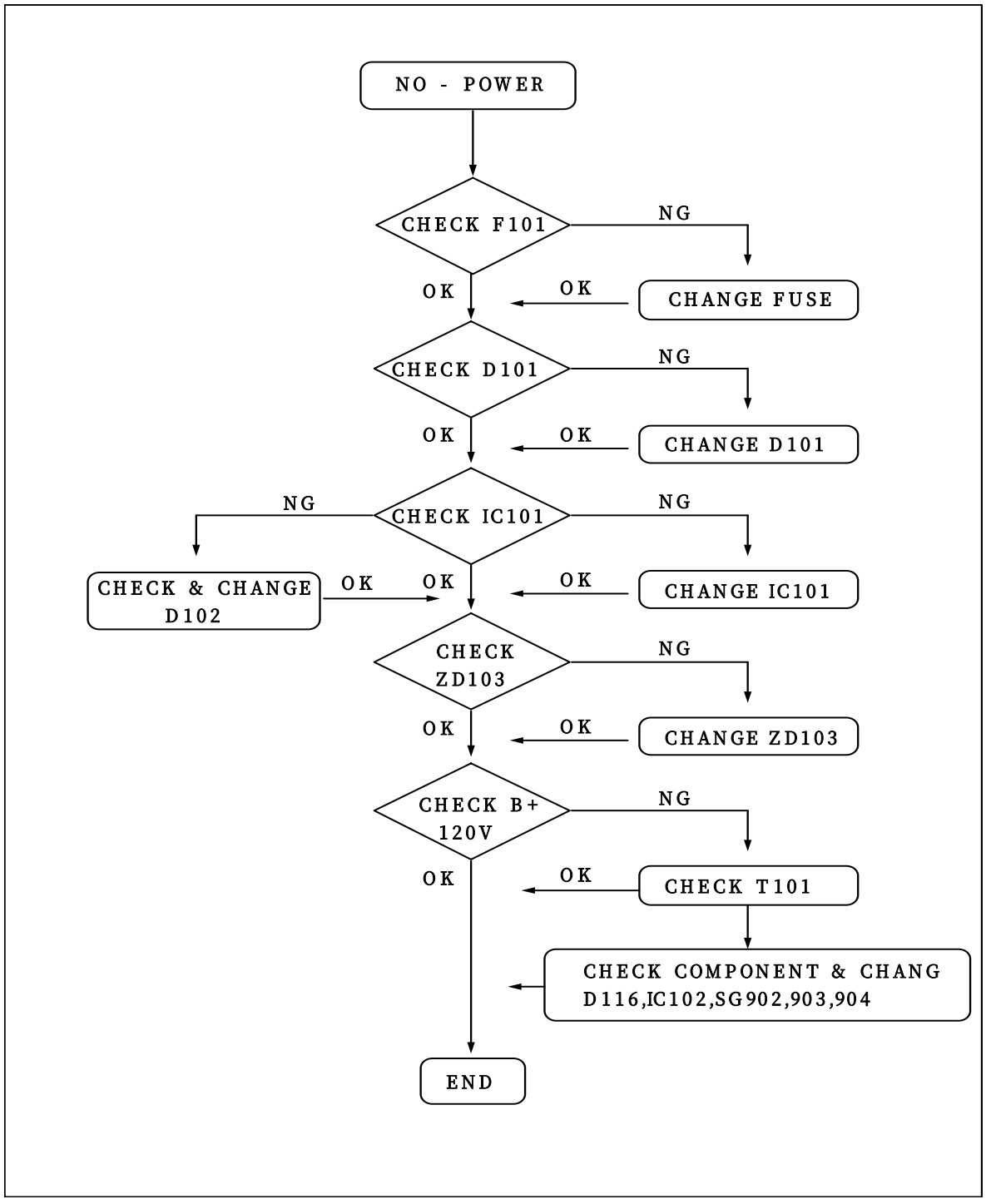
2) Measuring voltage : 23.4 KV ± 300V

3) Measuring condition : To measure the change of screen size at time of max and min. in Contrast V/R under full white pattern

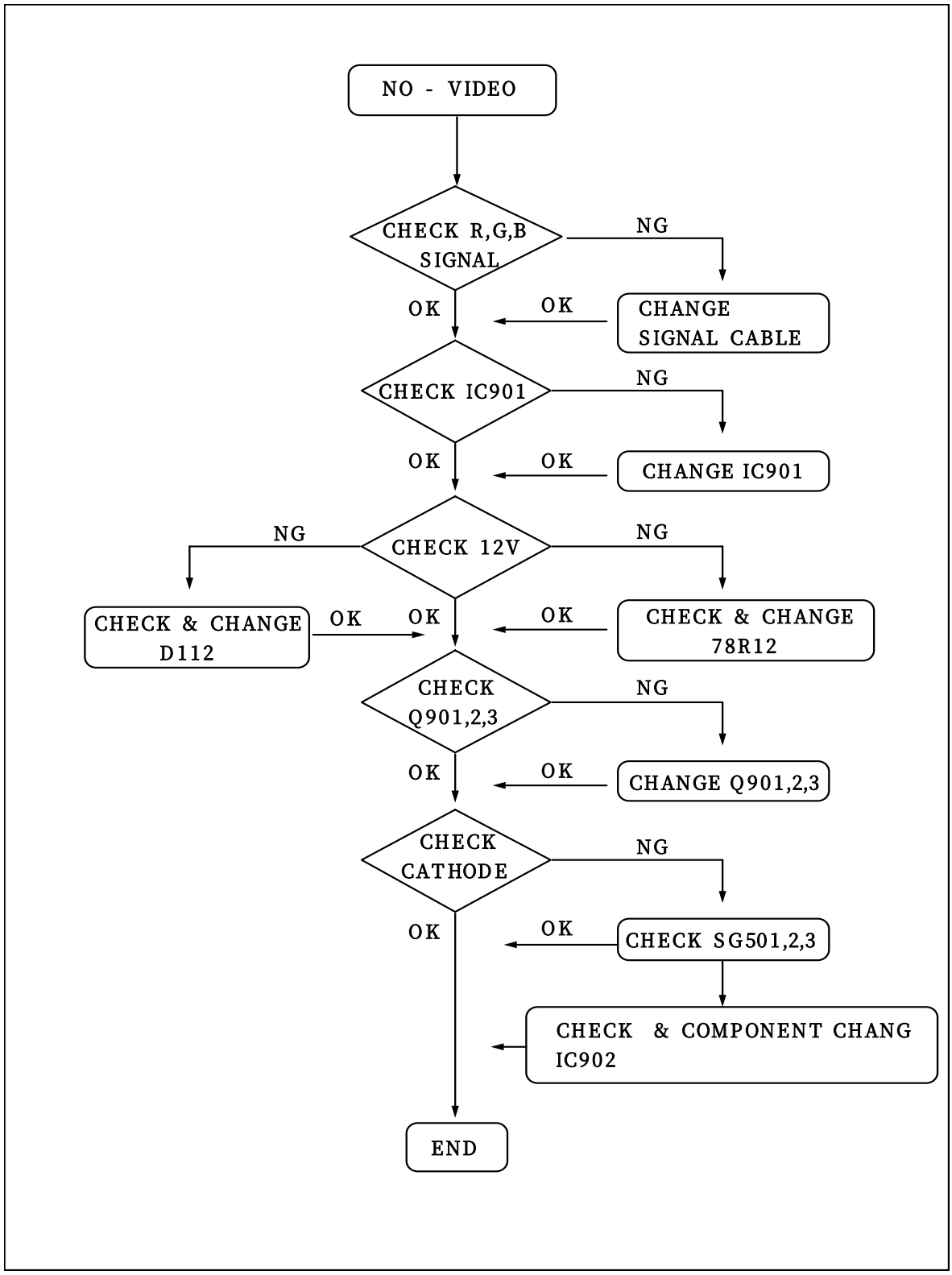
4) Screen change : within 2.0 mm

7. TROUBLESHOOTING GUIDE

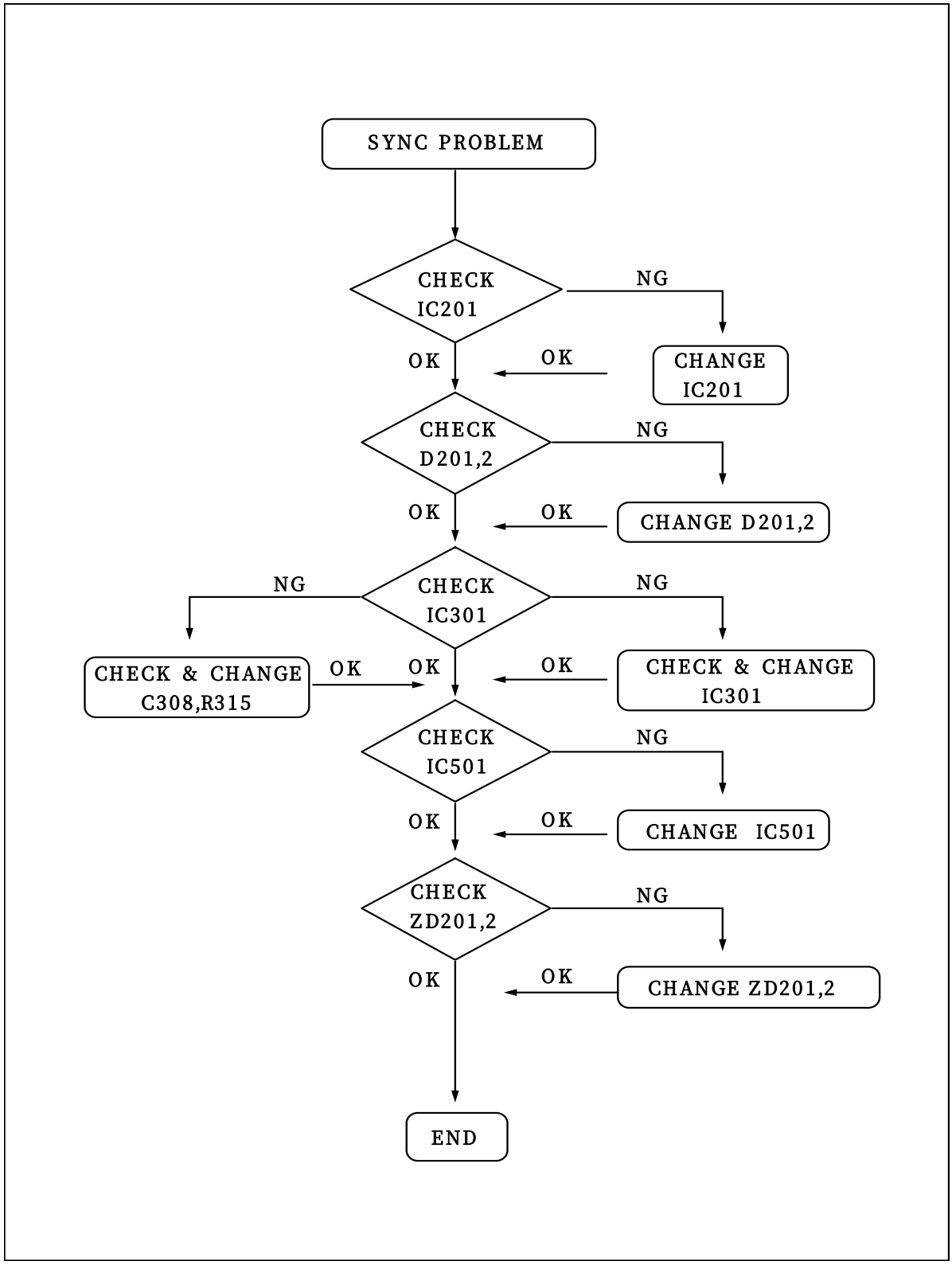
7-1 NO-POWER



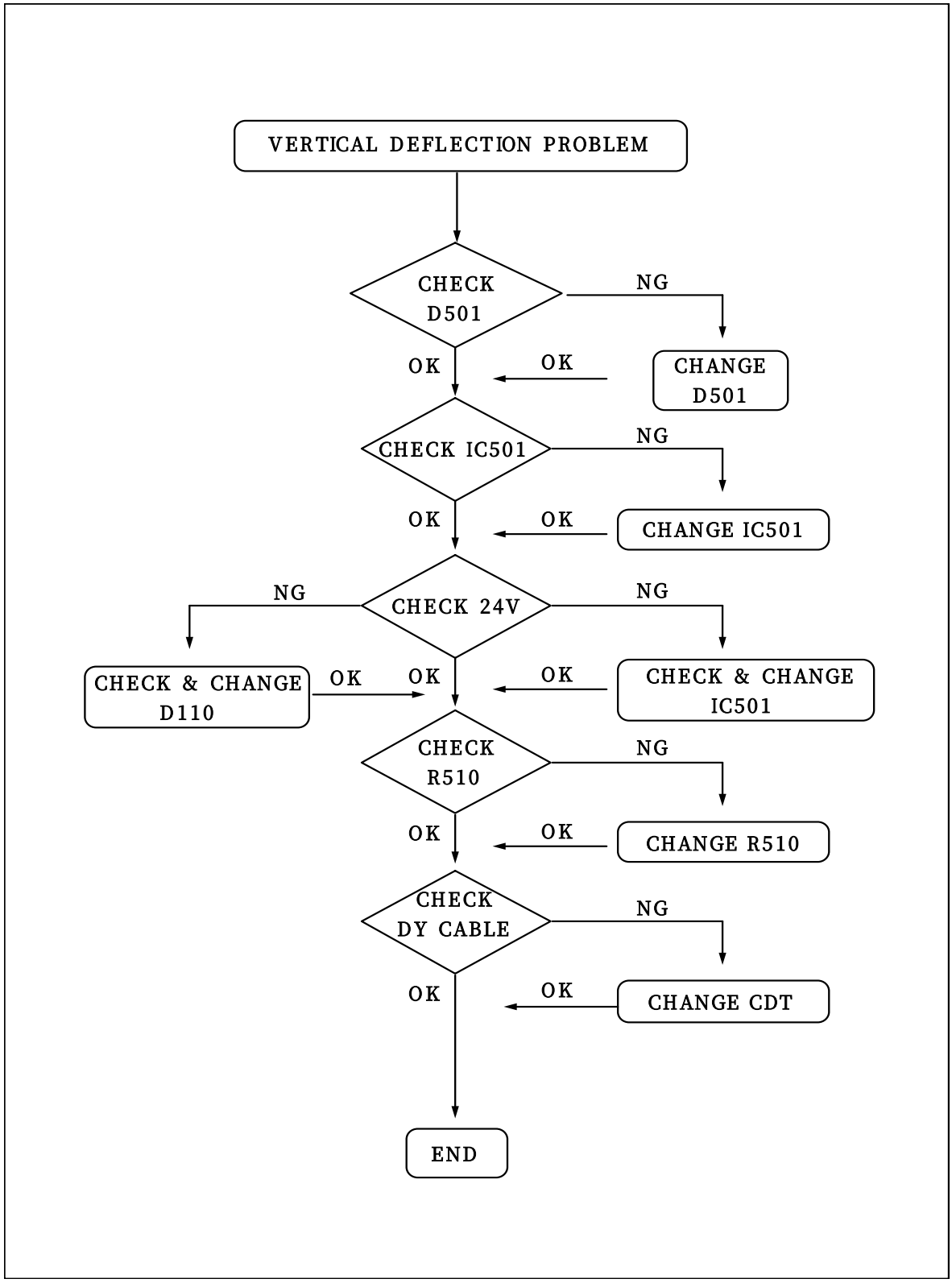
7-2 NO-VIDEO


NO - VIDEO
CHECK R,G,B SIGNAL
NG
OK
OK
CHANGE SIGNAL CABLE
CHECK IC901
NG
OK
OK
CHANGE IC901
NG
CHECK 12V
NG
CHECK & CHANGE D112
OK
OK
OK
CHECK & CHANGE 78R12
CHECK Q901,2,3
NG
OK
OK
CHANGE Q901,2,3
CHECK CATHODE
NG
OK
OK
CHECK SG501,2,3
CHECK & COMPONENT CHANG IC902
END

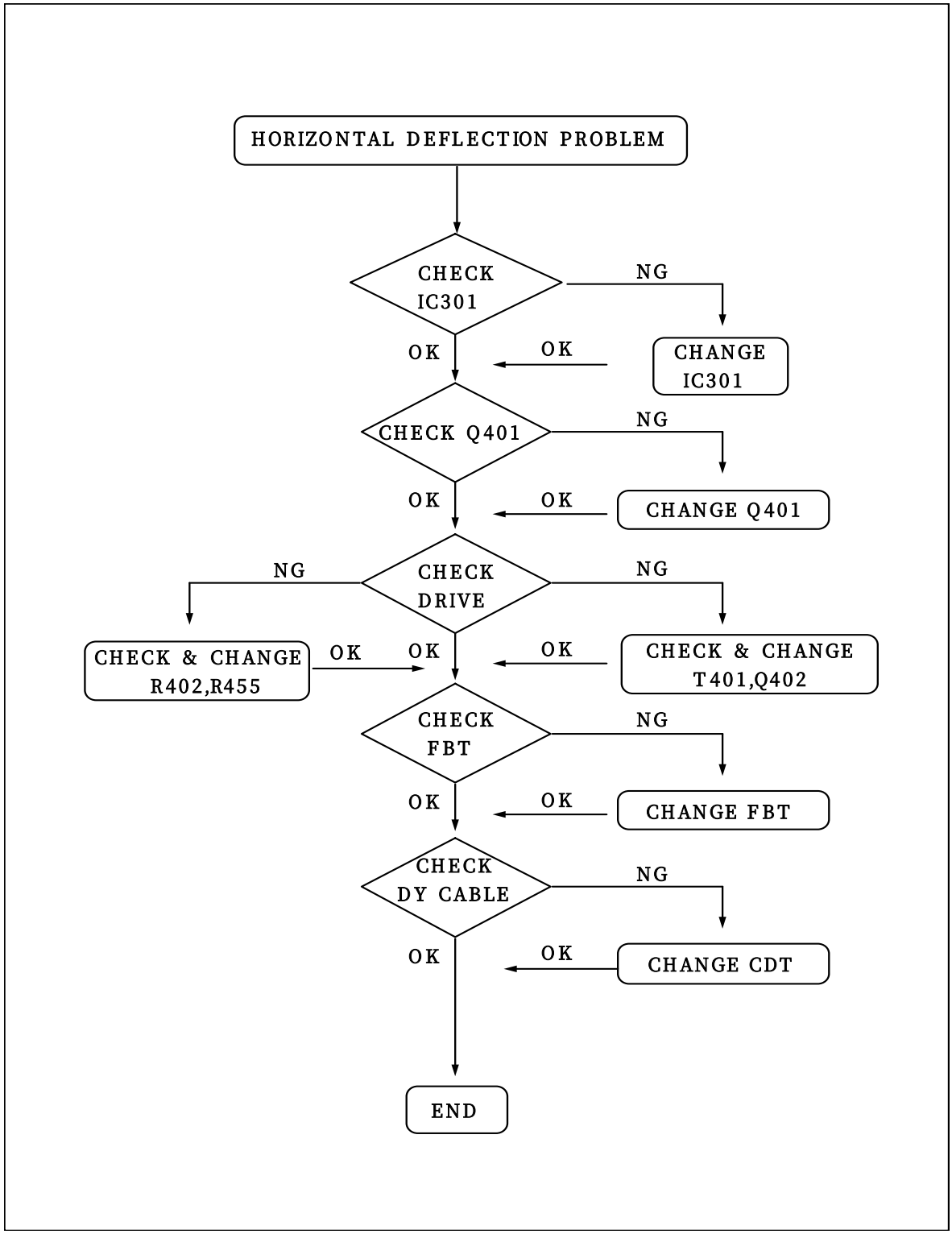
7-3 NO SYNC PROBLEM



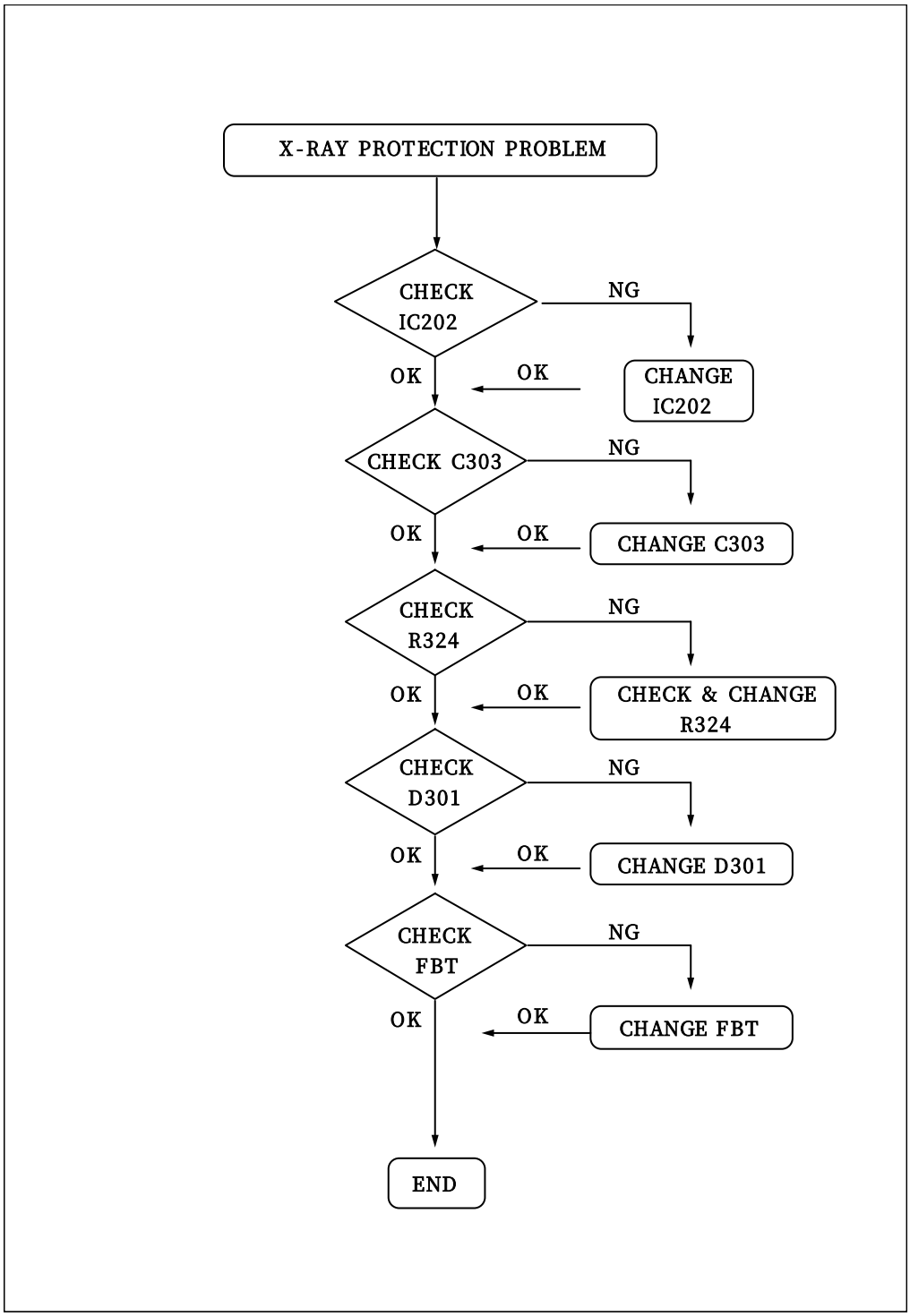
8-4 VERTICAL DEFLECTION PROBLEM



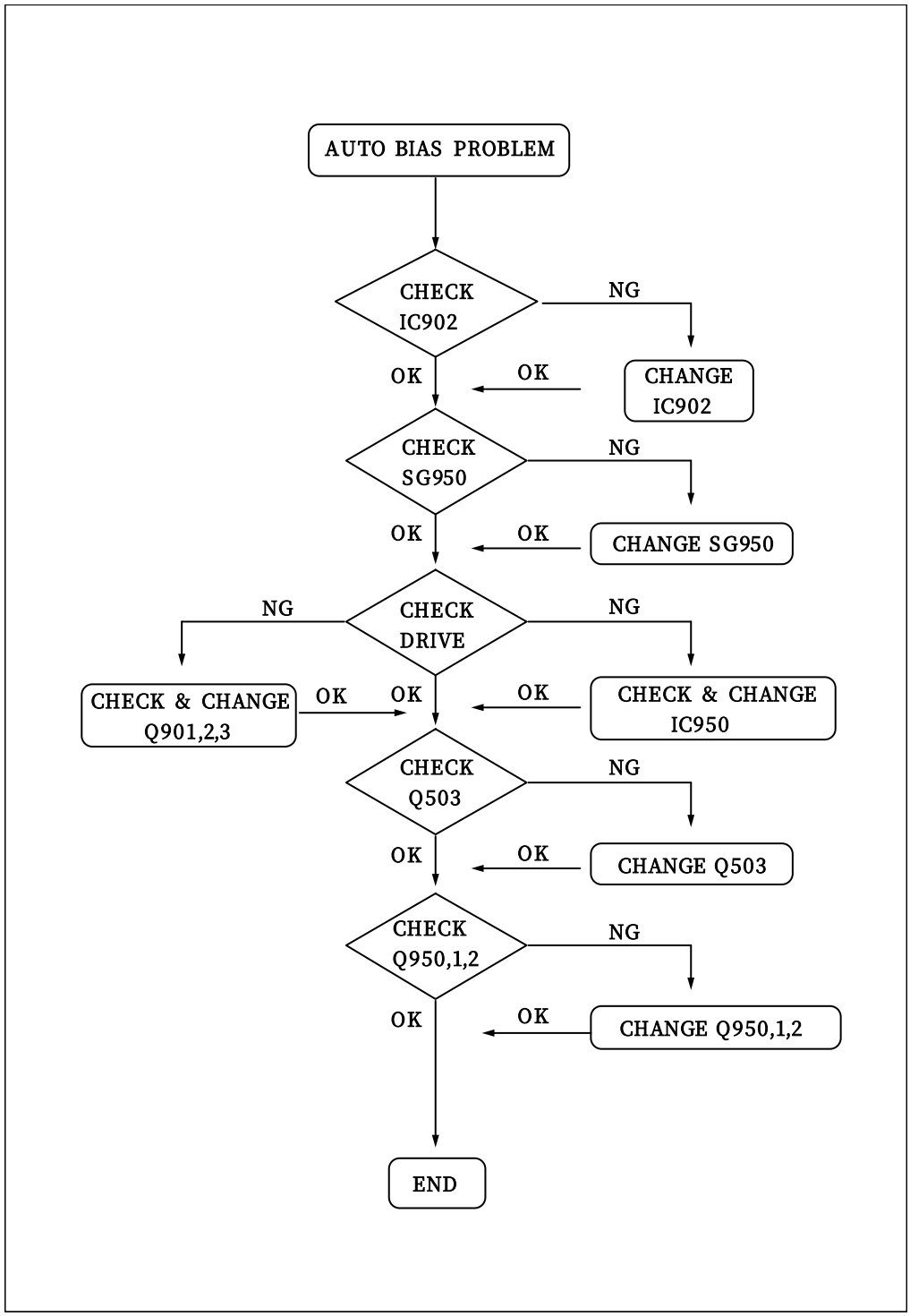
7-5 HORIZONTAL DEFLECTION PROBLEM



7-6 X-RAY FROTECTION PROBLEM

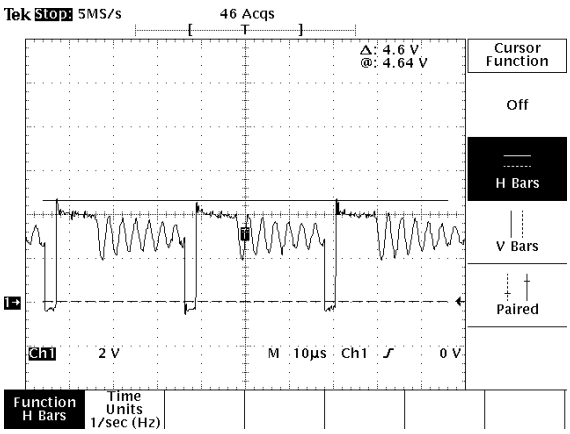


7-7 AUTOBIAS PROBLEM

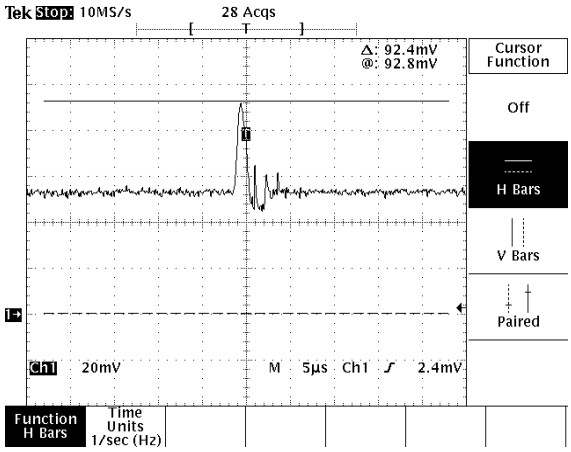


8.주요부위 파형

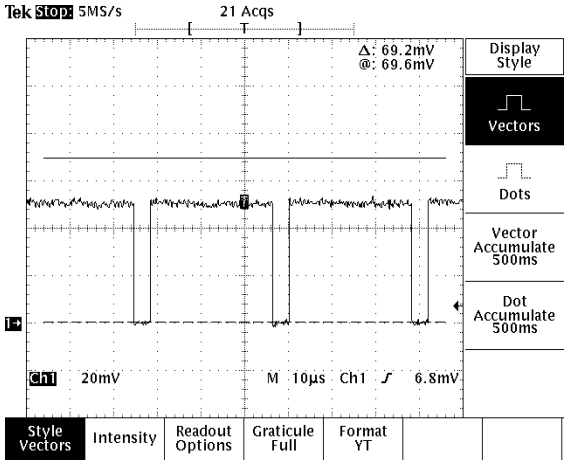
1)IC101(0880) PIN 1 OUTPUT WAVEFORM



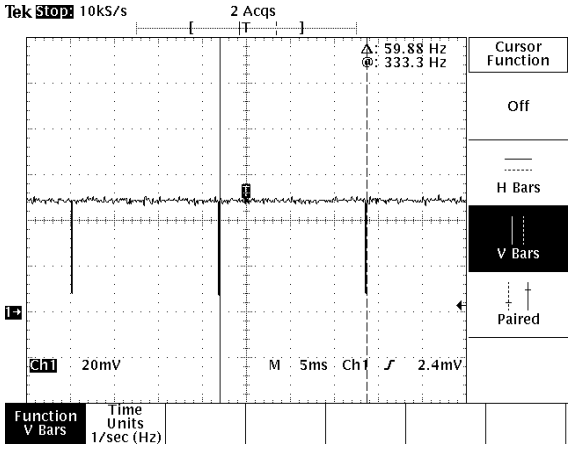
2)IC101(0880) PIN 5 INPUT WAVEFORM



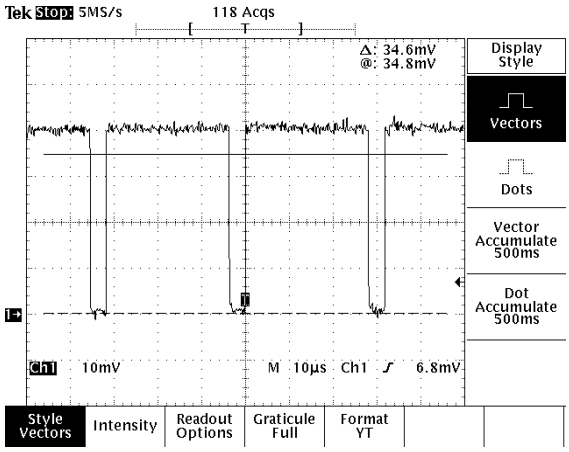
3) H-SYNC WAVE FORM



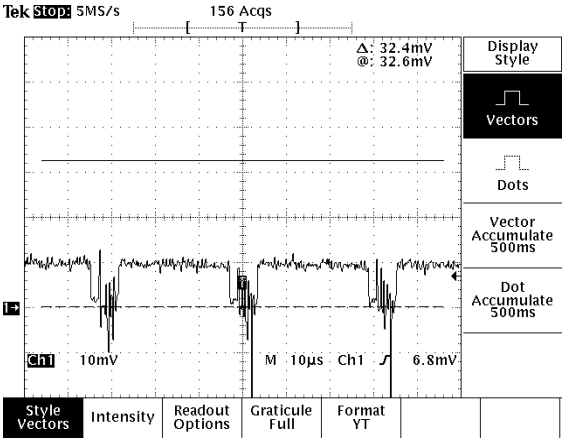
4)V-SYNC WAVEFORM



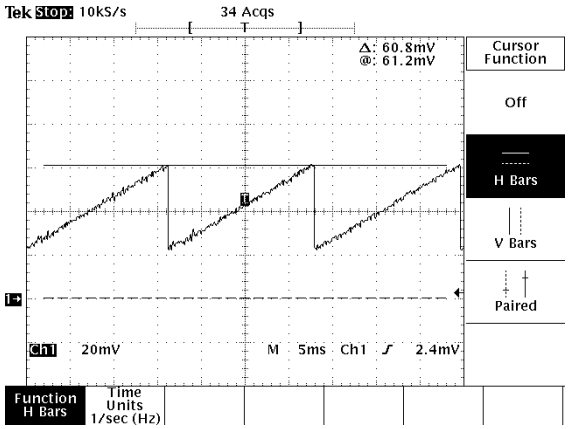
5)CLAMP WAVEFORM



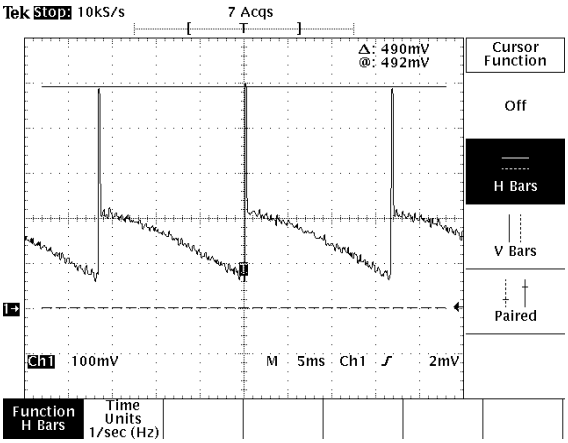
6)VIDEO IN PUT WAVEFORM



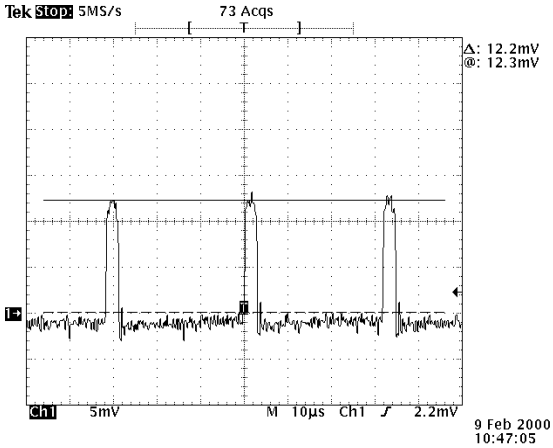
7)IC301 PIN 15 OUT PUT WAVEFORM



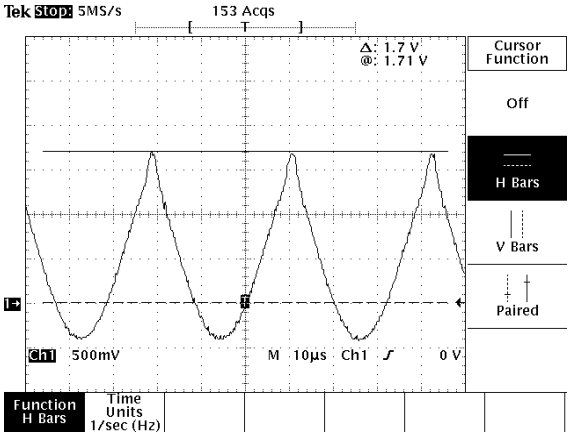
8) IC501 PIN 5 OUT PUT WAVEFORM



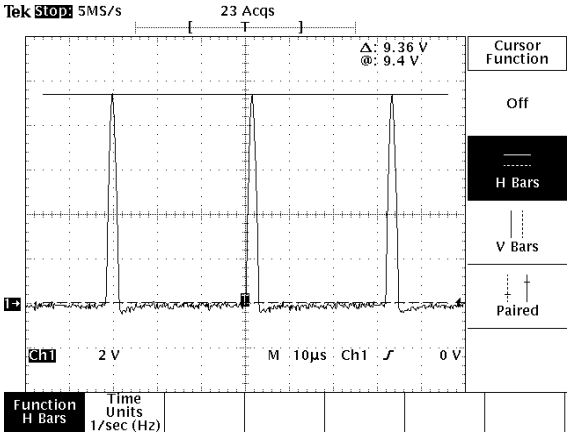
9)IC301 PIN 8 FLY BACK IN PUT WAVEFORM



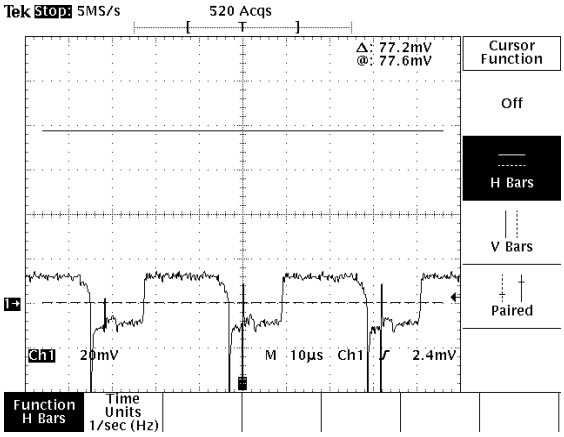
10DYNAMIC FOCUS WAVEFORM



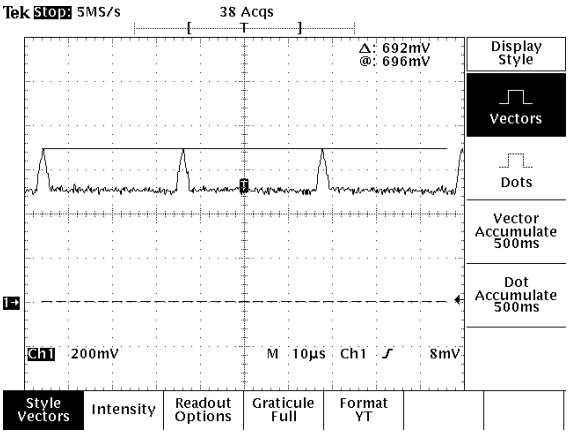
11) Q402 OUTPUT WAVEFORM



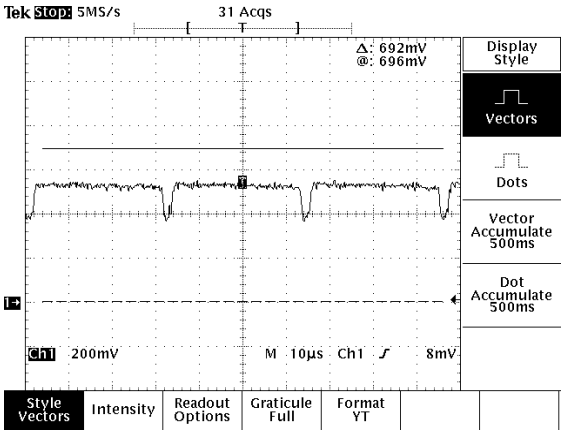
12)Q402 BASE WAVEFORM



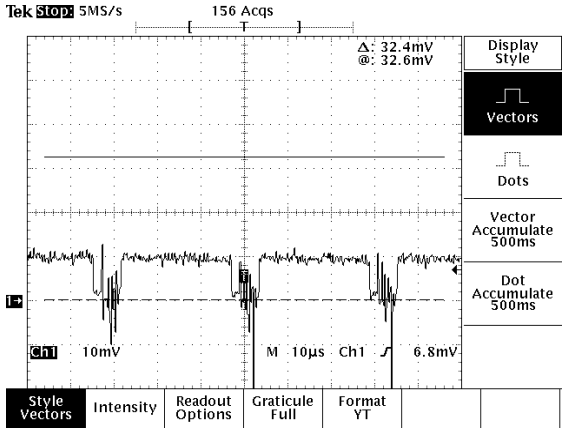
13) D403 WAVEFORM



14)D404 WAVEFORM

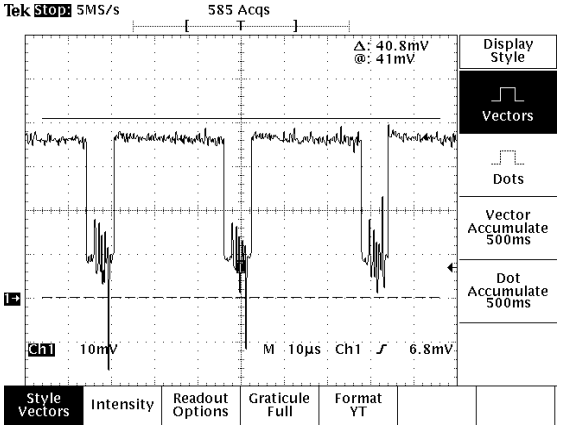


15) VIDEO IN PUT WAVEFORM

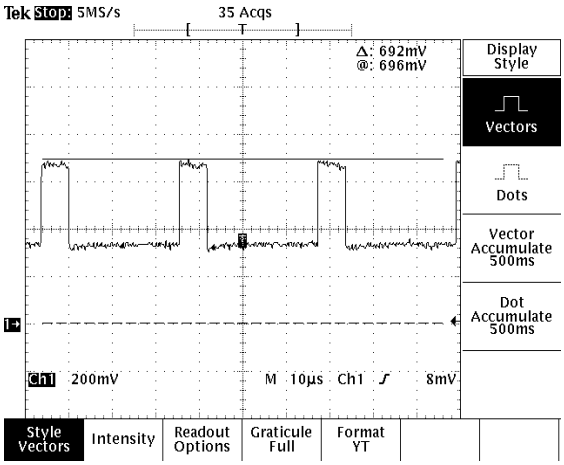


"FULL WHITE"

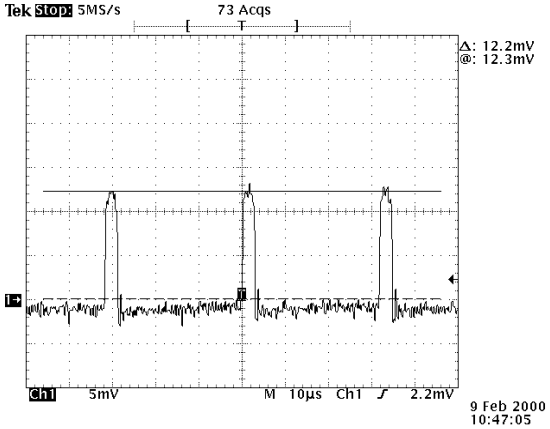
16) VIDEO_PREAMP OUT WAVW FORM



17) VIDEO CATHODE OUT WAVE FORM



18) IC301_8P WAVE FORM



8.BILL OF MATERIAL

NO	DESCRIPTION	SPECIFICATION	LOCATION NO.
1	JUMP WIRE	7.5mm	J950, J950, J950
2	JUMP, WIRE	8 mm	R720
3	JUMP, WIRE	8 mm	J919, J921, J920, J911, J910
4	JUMP, WIRE	7.5 mm	J103, J110, J113, J114, J118,J120, J121, J122, J127, J134,J135, J136, J139, J141, J142,J145, J146, J148, J150, J151,J152, J153, J155, J156, J160,J161, J162, J172, J174, J178,J179, J190, J191, D202, R123밑
5	JUMP, WIRE	7.5 mm	J701
6	JUMP, WIRE	7.5 mm	J930, J915, J914, J922, J912
7	JUMP, WIRE	7 mm	J906, J923, J926
8	JUMP, WIRE	6 mm	J903, J904, J907, J909, J901
9	JUMP, WIRE	5 mm	J902
10	JUMP, WIRE	20 mm	J126
11	JUMP, WIRE	15 mm	J101, J119, J123, J124, J125,J140, J144, J147, J173
12	JUMP, WIRE	15 mm	J702, J703
13	JUMP, WIRE	12.5 mm	J112, J128, J132, J133, J143,J149, J169, J167, J193
14	JUMP, WIRE	12.5 mm	J908, J905, J917
15	JUMP, WIRE	10 mm	J159, J170, J182, J194, R104,R328, R331, D301, J176
17	JUMP, WIRE	10 mm	J708
18	JUMP, WIRE	10 mm	J916, J925, J913
19	JUMP WIRE	7.5mm	J950, J950, J950
20	JUMP, WIRE	8 mm	R720
	JUMPER, WIRE	10 mm	R435, R436외
	COIL, INDUCTOR	100uH (AL03 TYPE)	J115, J116
	COIL, INDUCTOR	4.7uH (AL03 TYPE)	J175

NO	DESCRIPTION	SPECIFICATION	LOCATION NO.
21	HARNESS	190mm (2P, 3P)→38K	CN701
22		160mm (4P)→CUTTING	
23	BEAD, CORE	ATS3560L, 3.5*6mm	BD101, BD401, J102
24	CABLE TIE	SJCT-100mm	
25	CAPACITOR, CERAMIC	50V 102pF B "K"	C906, C907, C908
26	CAPACITOR, CERAMIC	50V 103pF F "Z"	C901, C910, C911, C912
27	CAPACITOR, CERAMIC	50V 104pF F "Z"	C916
28	CAPACITOR, CERAMIC	50V 221pF SL "J"	C918, C919
29	CAPACITOR, CERAMIC	50V 561pF SL "J"	C953, C953, C953
30	CAPACITOR, CERAMIC (NPO)	50 V 101 pF "J"	C417
31	CAPACITOR, CERAMIC (NPO)	50 V 221 pF "J"	C305
32	CAPACITOR, CERAMIC (NPO)	50 V 271 K "J"	C109
33	CAPACITOR, CERAMIC (NPO)	50V 331pF "J"	C929, C930, C935
34	CAPACITOR, ELECTROLYTIC	16 V 470 uF KME (KMG)	C123, C126
35	CAPACITOR, ELECTROLYTIC	25 V 470 uF KME (KMG)	C301, C406, C407
36	CAPACITOR, ELECTROLYTIC	30 V 10 uF (OS-CON)	C420
37	CAPACITOR, ELECTROLYTIC	35 V 220 uF KME (KMG)	C504
38	CAPACITOR, ELECTROLYTIC	35 V 1000uF KME (KMG)	C122, C503, C119
39	CAPACITOR, ELECTROLYTIC	35 V 2200uF KME (KMG)	C507
40	CAPACITOR, ELECTROLYTIC	50 V 0.47uF KME (KMG)	C471
41	CAPACITOR, ELECTROLYTIC	50 V 1 uF KME (KMG)	C108, C311, C418, C472
42	CAPACITOR, ELECTROLYTIC	50 V 2.2uF KME (KMG)	C307
43	CAPACITOR, ELECTROLYTIC	50 V 4.7uF KME (KMG)	C419, C204
44	CAPACITOR, ELECTROLYTIC	50 V 10 uF KME (KMG)	C201, C202, C313, C415, C423.C429, C509
45	CAPACITOR, ELECTROLYTIC	50 V 47 uF KME (KMG)	C422, C506, C107
46	CAPACITOR, ELECTROLYTIC	50 V 100uF KME (KMG)	C203, C205, C414, C508, C510
47	CAPACITOR, ELECTROLYTIC	100 V 1 uF (BP) KME	C411
48	CAPACITOR, ELECTROLYTIC	160V 22 uF KME (KMG)	C408
49	CAPACITOR, ELECTROLYTIC	200V 33 uF KME (KMG)	C116, C124, C413
50	CAPACITOR, ELECTROLYTIC	200V 100 uF KME (KMG)	C118, C121
51	CAPACITOR, ELECTROLYTIC	400V 220 uF KME (KMG)	C105
52	CAPACITOR, ELECTROLYTIC	25V 100uF KME (KMG)	C917
53	CAPACITOR, ELECTROLYTIC	50V 1uF KME (KMG)	C904, C915, C922,C706, C707

NO	DESCRIPTION	SPECIFICATION	LOCATION NO.
54	CAPACITOR, ELECTROLYTIC	50V 10uF KME (KMG)	C902, C903, C905, C914
55	CAPACITOR, ELECTROLYTIC	200V 47uF KME (KMG)	C913
56	CAPACITOR, ELECTROLYTIC	250V 1uF KME (KMG)	C923
57	CAPACITOR, ELECTROLYTIC	100V 1uF (BP) KME (KMG)	C921, C928, C931, C934
58	CAPACITOR, ELECTROLYTIC	50V 0.22uF (4*7.5mm) SRA	C951, C951, C951
59	CAPACITOR, ELECTROLYTIC	50V 10uF (5*7mm) SRA	C952, C952, C952
60	CAPACITOR, EPOXY	250VAC 102pF M	C103, C104, C112, C113
61	CAPACITOR, EPOXY	1 KV 101 pF B "K"	C117, C120,C925
62	CAPACITOR, EPOXY	1 KV 471 pF B "K"	C114
63	CAPACITOR, EPOXY	1 KV 472 pF B "K"	C106
64	CAPACITOR, EPOXY	2KV 102pF B "K"	C933
65	CAPACITOR, MPE	100 V 224pF J	C310
66	CAPACITOR, MPP	250 V 824pF J	C404
67	CAPACITOR, MPP	250V 504pF J	C712
68	CAPACITOR, MYLAR	100 V 102pF J	C316, C319, C405
69	CAPACITOR, MYLAR	100 V 103pF J	C312, C315, C502, Q202,C708,C920
70	CAPACITOR, MYLAR	100 V 104pF J	C304, C501, C123-J177
71	CAPACITOR, MYLAR	100 V 154pF J	C511
72	CAPACITOR, MYLAR	100 V 223pF J	C306
73	CAPACITOR, MYLAR	100 V 224pF J	C110, C505
74	CAPACITOR, MYLAR	100 V 472pF J	C430
75	CAPACITOR, MYLAR	100 V 473pF J	C425
76	CAPACITOR, MYLAR	100 V 683pF J	C115
77	CAPACITOR, P.P	100 V 102pF J	C206, C309
78	CAPACITOR, P.P	100 V 153pF J	C308,C302
79	CAPACITOR, P.P	630 V 123pF J	C403
80	CAPACITOR, P.P	630 V 153pF J	C410
81	CAPACITOR, P.P	630 V 473pF J	C111
82	CAPACITOR, P.P	1.6KV 682pF J	C402
83	CAPACITOR, X-CAP(PILKOR)	250V 224pF K (BOX-TYPE)	C101, C102
84	CHASSIS, 1	246*196mm	
85	CHASSIS, 2	196mm	
86	COIL, CHOKE	C110R	L403

NO	DESCRIPTION	SPECIFICATION	LOCATION NO.
87	COIL, CHOKE	822 (8ϕ)	L401
88	COIL, LINE FILTER	LF-2828	L101
89	COIL, LINEARITY	17N 1	L402
90	COIL, PEAKING	151uH	BD103, BD104
91	COIL, PEAKING	4.7uH (AL03 TYPE)	L901, L902, L903
92	COIL, PEAKING	100uH (AL04 TYPE)	L904
93	COVER	107.5*46.5mm	
94	DIODE	1N4937, 600V 1A	D102, D103, D104, D114, D403,D404, D406, D501
95	DIODE	EGP20C, 150V 2A	D111
96	DIODE	RGP15J, 600V 1.5A	D110
97	DIODE	1N4002	D118
98	DIODE	HER204	D112
99	DIODE	RG4C	D108, D109, D116
100	DIODE	UF5404	D402
101	DIODE	DD84	D401
102	DIODE	1N4148	ZD101
103	DIODE	1N4002	D705
104	DIODE	1N4148	D701
105	DIODE	1N4148	D901, D902, D903, D904, D908,D909, D910
106	DIODE	FR107	D905, D906, D907
107	DIODE, BRIDGE	PBS406GU	D101
108	DIODE, ZENER	5.1V	ZD201, ZD202, ZD203
109	DIODE, ZENER	6.2V	ZD103
110	DIODE, ZENER	24V	ZD401, ZD402
111	DIODE, ZENER	UZP-10B	ZD301
112	DIODE, ZENER	24V 0.5W	ZD901
113	DIODE, ZENER	24V 0.5W	ZD950, ZD950, ZD950
114	F.B.T	KFS-61619	T402 (BLACK WIRE CUTTING)
115	FUSE	UL/CE 3.15L 250V (50T TYPE)	F101
116	FUSE CLIP	51A	F101
117	G.T PIN	2.36mm	CN101, CN102, GND

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NO	DESCRIPTION	SPECIFICATION	LOCATION NO.
118	G.T PIN	2.36mm	GND
119	HARNESS	500mm (12P COLOR)	CN205
120	HARNESS	5P*5P*160mm 38K용	CN702
121	HARNESS, 2P	ORANGE + RED 190mm,	J2, J3↔CN206
122	HARNESS, 7P	RING CORE(TO SOCKET)	CN204
123	HEAT SINK	JS 23-1 35mm	Q901, Q902, Q903
124	HEATSINK, FOR D401(HOR)	JS92 40mm	D401
125	HEATSINK, FOR FBT	A-3 85mm	T402
126	HEATSINK, FOR IC101(POW)	JS-21-2 40mm	IC101
127	HEATSINK, FOR IC501(VER)	JS-21-1 50mm(CUT)	IC501
128	HEATSINK, FOR Q102	JS 100 30mm	Q102
129	IC	TDA9102C	IC301
130	IC	KA358A (OP-AMP)	IC401
131	IC	TLP721(D4-GB)	IC102
132	IC	KA2S0880, 800V 8A	IC101
133	IC	74LS86 (TTL)	IC201
134	IC	TDA8172 (VERTICAL)	IC501
135	IC	MC14538BCP	IC202
136	IC	KA2141	IC901
137	IC	KIA2904 (SMD TYPE)	IC902
138	IC	KIA2904 (SMD TYPE)	IC950, IC950, IC950
139	JUMP, WIRE	5 mm	C416,
140	JUMP, WIRE	7 mm	C318
141	JUMP, WIRE	7.5mm	J950, J950, J950
142	PCB	CEM-1 110 * 82.5 mm	
143	PCB, CEM-1	107.5*46.5mm, 1.6t	
144	PCB, CEM-1 (FOCUS)	105*55*1.6T	
145	PCB, CEM-1 (MAIN)	246*196mm, 1.6t	
146	POSISTOR	DP3BG140M12	PH101
147	RELAY	DY1S-12H	RE702
148	RESISTOR , CEMENT	7W 1.2K F	R928, R930, R937
149	RESISTOR, CARBON	1/2W 47 J	R203

NO	DESCRIPTION	SPECIFICATION	LOCATION NO.
150	RESISTOR, CARBON	1/2W 150 J	R508
151	RESISTOR, CARBON	1/2W 270 J	R117
152	RESISTOR, CARBON	1/2W 120K J	R116
153	RESISTOR, CARBON	1/4W 1.5 J	R507
154	RESISTOR, CARBON	1/4W 22 J	R405
155	RESISTOR, CARBON	1/4W 27 J	R109, R425
156	RESISTOR, CARBON	1/4W 39 J	R512
157	RESISTOR, CARBON	1/4W 47 J	R407
158	RESISTOR, CARBON	1/4W 390 J	R408
159	RESISTOR, CARBON	1/4W 470 J	R205
160	RESISTOR, CARBON	1/4W 680 J	R414
161	RESISTOR, CARBON	1/4W 1K J	R103,R201,R202,R401,R403
162	RESISTOR, CARBON	1/4W 1.8K J	R402
163	RESISTOR, CARBON	1/4W 2K J	R505
164	RESISTOR, CARBON	1/4W 2.2K J	R118, R415, R432
165	RESISTOR, CARBON	1/4W 2.4K J	R419
166	RESISTOR, CARBON	1/4W 3.6K J	R409
167	RESISTOR, CARBON	1/4W 4.7K J	R207, R430
168	RESISTOR, CARBON	1/4W 6.2K J	R319, R431
169	RESISTOR, CARBON	1/4W 10K J	R209
170	RESISTOR, CARBON	1/4W 12K J	R329, R416, R418
171	RESISTOR, CARBON	1/4W 22K J	R306, R501, R504
172	RESISTOR, CARBON	1/4W 39K J	R451
173	RESISTOR, CARBON	1/4W 43K J	R422
174	RESISTOR, CARBON	1/4W 51K J	R305
175	RESISTOR, CARBON	1/4W 56K J	R428, 317
176	RESISTOR, CARBON	1/4W 100K J	R324, R410, R417, R423, R424
177	RESISTOR, CARBON	1/4W 150K J	R318
178	RESISTOR, CARBON	1/4W 180K J	R454
179	RESISTOR, CARBON	1/4W 560K J	R120
180	RESISTOR, CARBON	1/4W 1.2K F	R208
181	RESISTOR, CARBON	1/4W 1.5K F	R411
182	RESISTOR, CARBON	1/4W 3.3K F	R315

NO	DESCRIPTION	SPECIFICATION	LOCATION NO.
183	RESISTOR, CARBON	1/4W 4.3K F	R506
184	RESISTOR, CARBON	1/4W 5.6K F	R503
185	RESISTOR, CARBON	1/4W 6.8K F	R313, R509
186	RESISTOR, CARBON	1/4W 9.1K F	J177
187	RESISTOR, CARBON	1/4W 10K F	R332
188	RESISTOR, CARBON	1/4W 14K F	R327
189	RESISTOR, CARBON	1/4W 22K F	R312
190	RESISTOR, CARBON	1/4W 24.5K F	R206
191	RESISTOR, CARBON	1/4W 56K F	R314
192	RESISTOR, CARBON	1/4W 68K F	R113
193	RESISTOR, CARBON	1/4W 82K, F	R420
194	RESISTOR, CARBON	1/4W 100K F	R325
195	RESISTOR, CARBON	1/4W 270K F	R316
196	RESISTOR, CARBON	1/6W 100 J	R111
197	RESISTOR, CARBON	1/6W 220 J	R455
198	RESISTOR, CARBON	1/6W 330 J	R210
199	RESISTOR, CARBON	1/6W 390 J	R204, J104
200	RESISTOR, CARBON	1/6W 1K J	R110
201	RESISTOR, CARBON	1/6W 5.6K J	R472
202	RESISTOR, CARBON	1/6W 820 J	R112
203	RESISTOR, CARBON	1/6W 10K J	R121
204	RESISTOR, CARBON	1/6W 68K J	R471
205	RESISTOR, CARBON	1/6W 15M J	R211
206	RESISTOR, CARBON	1/6W 2.4K F	R114
207	RESISTOR, CARBON	1/6W 27K F	R421, R502
208	RESISTOR, CARBON	1/6W 100K F	R333
209	RESISTOR, CARBON	1/4W 100 J	R513
210	RESISTOR, CARBON	1/4W 3.3K J	R433
211	RESISTOR, CARBON	1/4W 5.1K J	R308
212	RESISTOR, CARBON	1/4W 10K J	R427
213	RESISTOR, CARBON	1/4W 12K J	R307, R434
214	RESISTOR, CARBON	1/4W 30K J	R310
215	RESISTOR, CARBON	1/4W 75K J	R309

NO	DESCRIPTION	SPECIFICATION	LOCATION NO.
216	RESISTOR, CARBON	1/2W 47 J	R716
217	RESISTOR, CARBON	1/2W 100 J	R715
218	RESISTOR, CARBON	1/6W 1K J	R724
219	RESISTOR, CARBON	1/6W 4.7K J	R723
220	RESISTOR, CARBON	1/6W 15K J	R721, R722
221	RESISTOR, CARBON	1/6W 75, F	R901, R902, R903
222	RESISTOR, CARBON	1/6W 100, F	R906, R914, R927, R929, R932
223	RESISTOR, CARBON	1/6W 390, F	R905, R915, R939
224	RESISTOR, CARBON	1/6W 32K, F	R911
225	RESISTOR, CARBON	1/6W 33K, F	R913, R940
226	RESISTOR, CARBON	1/6W 100K, F	R909, R910, R912
227	RESISTOR, CARBON	1/6W 330, J	R945, R946, R947
228	RESISTOR, CARBON	1/6W 1K, J	R904
229	RESISTOR, CARBON	1/6W 2.4K, J	R916
230	RESISTOR, CARBON	1/6W 3.3K, J	R925
231	RESISTOR, CARBON	1/6W 9.1K, J	R920
232	RESISTOR, CARBON	1/6W 27K, J	R908
233	RESISTOR, CARBON	1/6W 100K, J	R926
234	RESISTOR, CARBON	1/6W 270K, J	R935
235	RESISTOR, CARBON	1/6W 560K, J	R924
236	RESISTOR, CARBON	1/6W 1M, J	R917
237	RESISTOR, CARBON	1/6W 4.7M, F	R948
238	RESISTOR, CARBON	1/6W 10M, J	R931, R933, R936
239	RESISTOR, CARBON	1/6W 15M, J	R934
240	RESISTOR, CARBON	1/6W 9.1K, F	R964, R964, R964
241	RESISTOR, CARBON	1/6W 20K, F	R951, R951, R951
242	RESISTOR, CARBON	1/6W 33K, F	R952, R952, R952
243	RESISTOR, CARBON	1/6W 1M, F	R956, R956, R956
244	RESISTOR, CARBON	1/6W 680, J	R957, R957, R957
245	RESISTOR, CARBON	1/6W 1.8K, J	R962, R962, R962
246	RESISTOR, CARBON	1/6W 100K, J	R961, R961, R961
247	RESISTOR, CARBON	1/6W 4.7M, F	R950, R959, R960, R960, R960
248	RESISTOR, CARBON	1/6W 15M, J	R958, R958, R958

NO	DESCRIPTION	SPECIFICATION	LOCATION NO.
249	RESISTOR, CARBON	1/6W 100 F	R938
250	RESISTOR, CARBON	1/6W 8.2K J	R922
251	RESISTOR, CARBON	1/6W 560K J	R921, R923
252	RESISTOR, CARBON	1/6W 15K F	R954, R954, R954
253	RESISTOR, CARBON	1/6W 1M F	R955, R955, R955
254	RESISTOR, CARBON	1/6W 47K J	R963, R963, R963
255	RESISTOR, CEMENT	5W 75 J	R404
256	RESISTOR, CEMENT	5W 56 J (LEAD 45mm)	R406
257	RESISTOR, CEMENT	5W 100 J (LEAD 45mm	R511
258	RESISTOR, METAL	1W 1.8 J	R125
259	RESISTOR, METAL	1W 2 J	R510
260	RESISTOR, METAL	1W 56K J	R102
261	RESISTOR, METAL	2W 2.2 J	R123
262	RESISTOR, METAL	2W 12 J	R126
263	RESISTOR, METAL	2W 1K J	R429
264	RESISTOR, METAL	2W 22K J	R119
265	RESISTOR, METAL	2W 68K J	R108
266	RESISTOR, VARIABLE	500B, RVM630H	VR101
267	RESISTOR, VARIABLE	10KB, RVM630H	VR402
268	RESISTOR, VARIABLE	50KB, RVM630H	VR301, VR302, VR303, VR401
269	RESISTOR, VARIABLE	10KB, 068C	C303
270	RESISTOR, VARIABLE	5KB, 92H	VR404
271	RESISTOR, VARIABLE	10KB, 92H	VR405, VR406
272	RESISTOR, VARIABLE	20KB, 92H	VR501
274	RESISTOR, VARIABLE	50KB, 92H	VR305
275	RESISTOR, VARIABLE	10KB, 068C	C303
276	SCR	KA431AZ	Q101
277	SCR	MCR-100-6	Q301
278	SCREW (PAN WASHER)	TP 3*8 CUT	Q901, Q902, Q903
279	RESISTOR, CARBON	1/6W 100 F	R938
280	RESISTOR, CARBON	1/6W 8.2K J	R922
281	RESISTOR, CARBON	1/6W 560K J	R921, R923

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NO	DESCRIPTION	SPECIFICATION	LOCATION NO.
282	SCREW, TAPPING	TP3*8mm, CUT	
283	SCREW, TAPPING	TP3*12mm, CUT	
284	SILICON PAD	20*25mm*0.45t	FOR IC101
285	SOCKET	PCS-626-01	PCS626-01
286	SOCKET PCB COVER	82.5 * 110mm	
287	SURGE ABSORBER	BSD-201L	SG902, SG903, SG904
288	SURGE ABSORBER	BSD-201L	SG950, SG950, SG950
289	THERMISTOR	8D13	TH101
290	TRANS, HDT	KTV-2218B	T401
291	TRANS, MAIN	KTV-4042A, 15NA	T101
292	TRANSISTOR	A1023	Q404
293	TRANSISTOR	A1271	Q502
294	TRANSISTOR	B601-Y	Q102, Q408
295	TRANSISTOR	BU2520DF	Q402
296	TRANSISTOR	C2316	Q401
297	TRANSISTOR	C3198	Q201, Q303, Q405
298	TRANSISTOR	C3203	Q403, Q501
299	TRANSISTOR	C3206	Q103
300	TRANSISTOR	C3503	Q406, Q407
301	TRANSISTOR	C-945YC	Q710, Q711, Q712
302	TRANSISTOR	5042F	Q904
303	TRANSISTOR	3503D	Q901, Q902, Q903
304	TRANSISTOR	2N6517	Q951, Q951, Q951, Q952, Q952,Q952
305	TRANSISTOR	2N6520	Q950, Q950, Q950, Q953, Q953,Q953
306	WAFER	YFW800-04	CN401
307	WAFER	LW1143-02 (FBT SYNC)	CN103
308	WAFER	YW025-12 (CONTROL)	CN203
309	WAFER	5267-03 (H,V SYNC)	CN201
310	WAFER	5267-02 (DYNAMIC)	CN701
311	WAFER	5267-05 (DYNAMIC)	CN702, CN205
312	WAFER	5267-06-01	CN901
313	WAFER	5267-07-01	CN902

NO	DESCRIPTION	SPECIFICATION	LOCATION NO.
314	WAFER	FA 0640-08	CN950, CN950, CN950
315	WIRE, LEAD	BLACK 40mm 1007 #24	ZD201↔C422

KT-1903NA (UR)

※Parts list of KT-1903NA(UR) different from KT-1903NA(ST)

NO	DESCRIPTION	SPECIFICATION	LOCATION NO.
1	JUMPER, WIRE	7mm	C318
2	RESISTOR, CARBON	1/6W 330 J	R210
3	RESISTOR, CARBON	1/4W 130K F	R454
4	COIL, MAIN TRANS	KTV-4042A,19NA5(53V)	T101
5	CAPACITOR, AC EPOXY	250VAC 102pF, K	Rear attachment of IC101
6	CAPACITOR, AC EPOXY	250VAC 471pF, K	C103, C104
7	POSISTOR	PDGS69R0NSK	PH101
8	IC, C-MOS	HD74LS86P	IC201
9	RESISTOR, CARBON	1/6W 10K F	R113 (ZENER DIODE R113)
10	RESISTOR, METAL	1W 2.2 J	R510
11	POWER SAVING PCB	POWER SAVING PCB	R126
12	RESISTOR, CARBON	1/6W 75 F	R901, R902, R903
13	RESISTOR, CARBON	1/6W 39K F	R911
14	CAPACITOR, CERAMIC	50V 331pF SL "J"	C929, C930, C935
15	RESISTOR, CARBON	1/6W 560K J	R924
16	RESISTOR, CEMENT	7W 1.2K F	R928, R930, R937
17	WAFER	LW-0640-06	CN901
18	SILICON GREASE	YG6111	
19	HARNESS, 12PIN COLOR	650 mm	CN205
20	JUMP, WIRE	7.5mm	J950, J950, J950
21	PCB	CEM-1 (90X72mm)	
22	PCB	CEM-1 23*32	
23	TR	IRF9630	Q1
24	RESISTOR - CARBON	1/6W 1K J	R3
25	RESISTOR - CARBON	1/6W 3.3K J	R1
26	RESISTOR - METAL	2W 7.5 J	R4
27	LEAD - WIRE	90mm	
28	WAFER	LW0640-03	CN2
29	WAFER	FA0640-07	CN1
30	JUMPER, WIRE	7mm	C318
31	RESISTOR, CARBON	1/6W 330 J	R210

KT-1703NA (UR)

※Parts list of KT-1703NA (UR) different from KT-1903NA (ST)

NO	DESCRIPTION	SPECIFICATION	LOCATION NO.
1	BEAD, CORE	ATS3560L, 3.5*6mm	J124
2	COIL, INDUCTOR	AL03 4.7uH	LXXX (POWER TRANS PIN 8번)
3	DIODE, RECTIFIER	EGP20C, 150V 2A	D111
4	DIODE, RECTIFIER	1N4148, 75V 150mA	ZD101, D201
5	DIODE, ZENER	10V UZP-10B (1W)	ZD301
6	JUMPER, WIRE	7.5 mm	J153 J154,J109, J162 J166, J118, IC301, Q202↔R211, C122↔C126
7	JUMPER, WIRE	10 mm	R452↔C410, J163, C119↔C122, D305, R321, R320
8	JUMPER, WIRE	12.5 mm	J131
9	JUMPER, WIRE	15 mm	R429↔J115
10	RESISTOR, CARBON	1/6W 330 J	R210
11	RESISTOR, CARBON	1/6W 680 J	R455
12	RESISTOR, CARBON	1/6W 2.2K J	R114
13	RESISTOR, CARBON	1/6W 5.6K J	R472
14	RESISTOR, CARBON	1/6W 10K J	R111
15	RESISTOR, CARBON	1/6W 33K J	R112
16	RESISTOR, CARBON	1/4W 15 J	R104
17	RESISTOR, CARBON	1/4W 47 J	R103
18	RESISTOR, CARBON	1/4W 75 J	R109
19	RESISTOR, CARBON	1/4W 470 J	R402
20	RESISTOR, CARBON	1/4W 1.8K J	R401
21	RESISTOR, CARBON	1/4W 2K J	R505
22	RESISTOR, CARBON	1/4W 3.3K, F	R315
23	RESISTOR, CARBON	1/4W 7.5K J	R504
24	RESISTOR, CARBON	1/4W 8.2K J	R326
25	RESISTOR, CARBON	1/4W 9.1K J	R416
26	RESISTOR, CARBON	1/4W 10K J	J138
27	RESISTOR, CARBON	1/4W 27K J	R421, R502
28	RESISTOR, CARBON	1/4W 56K, F	R113,
29	RESISTOR, CARBON	1/4W 150K J	R454
30	RESISTOR, CARBON	1/4W 220K, J	R316

NO	DESCRIPTION	SPECIFICATION	LOCATION NO.
32	RESISTOR, CARBON	1/4W 1.8M J	R452
33	RESISTOR, CARBON	1/2W 10 J	R126
34	RESISTOR, CARBON	1/2W 470 J	R508
35	RESISTOR, CARBON	1/2W 10K J	R409
36	CAPACITOR, CERAMIC	50V 473pF F "Z"	C115
37	CAPACITOR, ELECTRO	25V 10uF, KME (KMG)	C313
38	CAPACITOR, ELECTRO	50V 0.47uF, KME (KMG)	C471, C472
39	CAPACITOR, ELECTRO	50V 22uF, KME (KMG)	C423(IC401 7번 PIN+GND)
40	CAPACITOR, MYLAR	100V 102pF J	IC301 no. 14 PIN과 GND, C405, R424 in parallel
41	CAPACITOR, MYLAR	100V 472pF J	C109, R401 in parallel
42	CAPACITOR, P.P	250V 155pF, J	C404
43	CAPACITOR, P.P	630V 103pF, J	C403
44	CAPACITOR, P.P	1.6KV 752pF J	C402
45	COIL, HDT	KTV-2218A	T401
46	COIL, LINEARITY	17N (19.5T) YELLOW DOT	L402
47	COIL, MAIN TRANS	KTV-4042A (17NA)	T101
48	DIODE, RECTIFIER	RG4C, 600V 1A	D109
49	DIODE, ZENER	6.2V	ZD103 (IC101 no.2 (-) no. 4(+))
50	G.T.PIN, DY 4PIN	4PIN MOLD (YFW800-06)	CN401
51	G.T.PIN, DY 6PIN	YFW500-06	CN402
52	JUMPER, WIRE	10mm	Above CN203
53	READ, WIRE	BLACK 150mm 1007 #24	J1 (J114 GND + C411 GND)
54	READ, WIRE	BLACK 40mm 1007 #24	R507↔C405
55	READ, WIRE	ORANGE 120mm 1007 #26	J3
56	READ, WIRE	RED 120mm 1007 #26	J2
57	PCB, CEM-1 MAIN	246*196mm, 1.6t	
58	RESISTOR, CARBON	1/6W 3.9K J	IC301 no.4 PIN+GND
59	RESISTOR, CARBON	1/6W 6.8K J	IC201 no.14 PIN+GND
60	RESISTOR, CARBON	1/6W 10K J	J147↔C318
61	RESISTOR, CARBON	1/6W 33K J	R471
62	RESISTOR, CARBON	1/4W 1.8M J	R452

NO	DESCRIPTION	SPECIFICATION	LOCATION NO.
63	RESISTOR, CARBON	1/4W 15K J	R332
64	RESISTOR, METAL	1W 1.2 J	R125
65	RESISTOR, METAL	2W 2.2 J	R123
66	RESISTOR, VARIABLE	2KB, RVM630H	VR401
67	RESISTOR, VARIABLE	10KB, RVM630H	VR403, Q302
68	SCREW, TAPPING	TP3*8mm, 2 CUT	
69	TRANSISTOR	MCR 100-6	Q301
70	CAPACITOR, ELECTRO	400V 220uF (25X40) KME (KMG)	C105
71	RESISTOR, VARIABLE	10KB, CET065C	VR301
72	DIODE (ZD)	1/2W 5.1V	D901, D902, D903
73	RESISTOR, CARBON	1/6W 390, F	R901, R902, R903,
74	RESISTOR, CARBON	1/4W 270K, J	R935
75	RESISTOR CARBON	1/6W 100 F	R938
76	F.B.T	KFS-61619	T402
77	SILICONE PAD RUBBER	20*24*0.45t (KSD-5072)	IC101
78	SCREW, TAPPING	TP3*8mm, 2 CUT	
79	SCREW, TAPPING	TP3*12mm, 2 CUT	
80	SILICON GREASE	YG6111(WHITE)	
81	JUMPER, WIRE	10 mm	
82	JUMPER, WIRE	12.5 mm	
83	PCB, CEM-1	107.5*46.5mm, 1.6t	
84	RESISTOR, CARBON	1/4W 3.3K J	R433
85	RESISTOR, CARBON	1/4W 10K J	R427
86	RESISTOR, CARBON	1/4W 39K J	R307
87	RESISTOR, CARBON	1/4W 47K J	R310
88	RESISTOR, VARIABLE	20KB, RVM630V	VR407
89	RESISTOR, CEMENT	5W 120	R404
90	RESISTOR, CARBON	1/6W 75K, F	R952, R952, R952
91	RESISTOR, CARBON	1/6W 220, F	R983
92	RESISTOR, CARBON	1/6W 470, J	R980